



19990202 003

**1998  
Munitions Executive  
Summit**

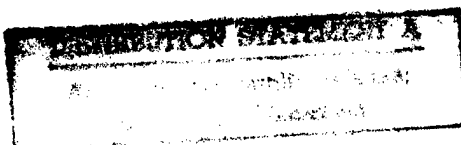
**Proceedings**

**September 14-16, 1998**

**The Ritz-Carlton, Palm Beach  
Manalapan, Florida**

**DTIC QUALITY INSPECTED 2**

**Meeting # 865**



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*Mark B. Finnegan*

MARK B. FINNEGAN

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IOC ACT COMPOSITION ADVOCATE

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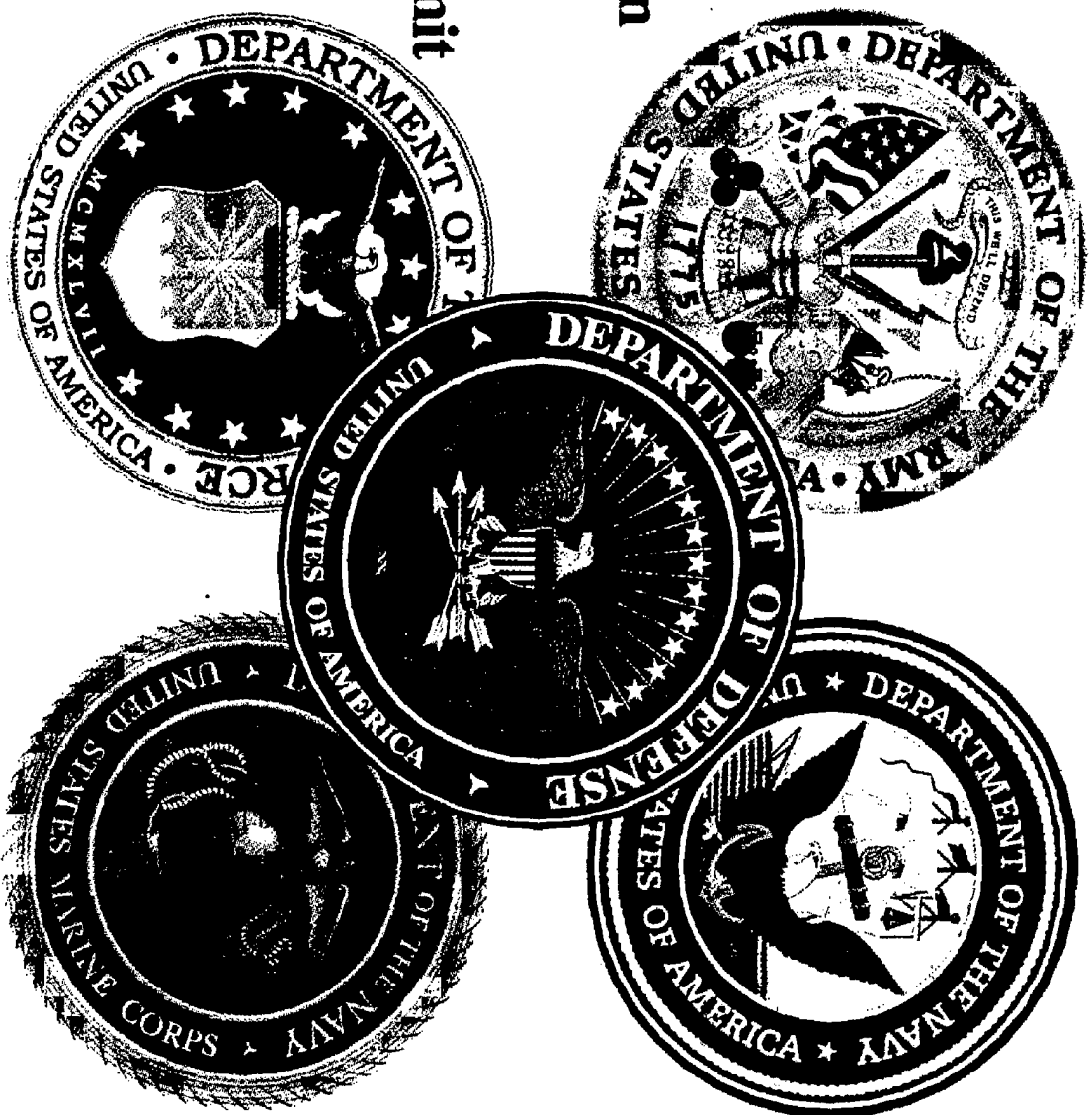
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**Ammunition Organization  
Working IPT Briefing  
to the  
Munitions Executive Summit  
15 Sep 98**

**Rod Tozzi  
AMCRDA-AM**



# Ground Rules

- Pacific Northwest National Laboratory study was a “**launch point**” only - not taken as “the” answer and not evaluated by the WIPPT
- WIPPT chartered to look at alternative organizational structures and address, to the extent possible, the degree of difficulty of implementing each
- WIPPT to determine the rough order of magnitude **POTENTIAL** for savings in terms of personnel reductions and cost associated with personnel reductions
- WIPPT built organizations on: **vision (ammo in 2003), corporate philosophy, desired characteristics, and derived attributes**. Did not build organizations based on Quadrennial Defense Review personnel reductions currently under consideration
- WIPPT provided resulting organizational constructs as **nuclei** for follow-on detailed reorganization efforts - schedules for implementation of each construct provides time for analyses of and modifications to existing processes and policies
- Use of WIPPT effort by the Army is dependent on issues or questions to be solved and the goals of the Army reorganization efforts

# Voting Organizations (20)

- USD(A&T) Munitions\*
- EDCA
- HQDA/Secretariat (6)
  - DCSOPS\* SARD-ZR\*
  - DCSLOG\* SARD-ZS
  - PA&E\* ASA (FM&C)\*
- PEO (4)
  - GCCS\*
  - TAC MISSILES
  - AVN
  - AMD
- HQAMC (2)
  - DCSAMMO/SARD-ZCA\*
  - DCSRDA\*
- AMC MSCs (3)
  - IOC/SMCA\*
  - TACOM (ARDEC)\*
  - AMCOM (IMMC)
- OTHER SERVICES (3)
  - USN
  - USMC
  - USAF

\*= original WIPPT member

# Overview

- Four constructs were produced that will accomplish the mission of improving ammunition management within the Army and DOD in varying degrees.
- These four constructs have been built and scored
  - Ammunition Command
    - Establishes a DSA for Ammo with Ammo PMs Under a MSC
  - PM/PEO Model w/Merged MSC
    - Joint Program Manager under a PEO (GCCSS)
    - Merges TACOM and IOC
  - Family Affair-Combat Systems
    - MACOM Restructure Merges PEO and AMC Organizations
  - Single Service
    - Ammo Organization If We Went to or Were Going to ONE Service
- Primary differences between constructs are:
  - Organization
  - Reductions associated with personnel and end-item cost
  - Ease and timing of implementation

# Construct Comparison

Construct	Weighted Scores -		Subjective Manpower Savings		Dollar
	Attributes	Rating	Savings	(M)	
AMMO CMD	3694	1084	139	\$14	
PEO /MSC	6574	1042	1050	\$105	
FAMILY AFFAIR	4811	1559	1655	\$166	
Single Service	4925	1789	5373	\$537	

## Notes:

- Attribute rating/weighted scores - **higher** score is better
- Subjective rating - **lower** score is better (addresses the difficulty of moving to a construct of this type)
- Majority of personnel savings in PEO/MSC model derived from merging of TACOM & IOC.
- **Manpower Reductions and Dollar Savings** based on:

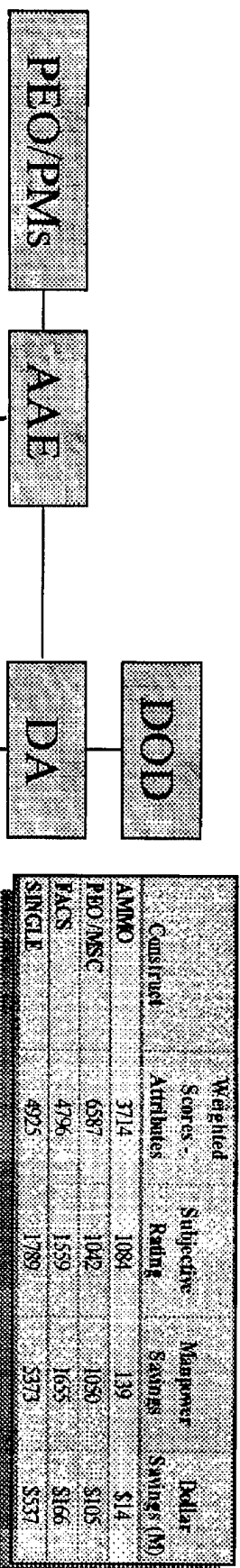
\*FY97 TDAs

\*No incorporation of QDR

\*Top line only-No attempt at MEO analysis

# AMMUNITION COMMAND MODEL

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18 Aug 98

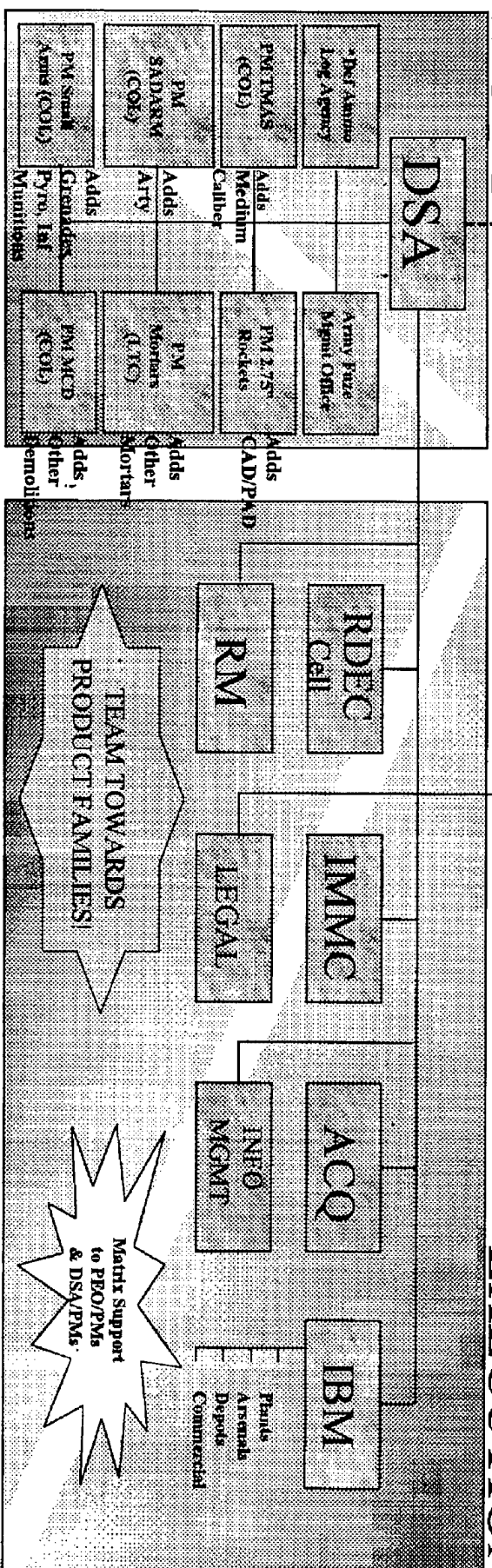


## AMMUNITION COMMAND

### MGMT

### CMD SPT STAFF

### EXECUTION



# Program Executive Office

Corrected Copy  
18 Aug 98

**ASARDA  
MILDEP  
(LTG)**

**PEO, Ammunition & Ground Combat Systems  
(MG)**

**Ofc of Conventional Munitions Integration  
(COL) 2**

**JPO  
PM Ammo &  
Director, SMCA  
(col) 3**

**PM Ground  
Systems Integ  
(COL)**

**PM Crusader  
(COL)**

**PM LT WT 155  
(COL)**

**PM Abrams  
(COL)**

**PM BEVS  
(COL)**

**Army Fuze  
Management Office**

**PM 2.75 Inch  
Rockets**

**PM DEMIL  
(LTC)**

**PM Mortars  
(LTC)**

**PM MCD  
(COL)**

**Def Ammo  
Log Agency  
(COL)**

**PM Joint  
Services  
(COL)**

**PM TMAS  
(COL)**

**PM SADARM  
(COL)**

**PM Small Arms  
(LTC)**

	Weighted Score - Attributes	Subjective Rating	Manpower Savings	Dollar Savings (\$M)
AMMO	374	1084	139	\$14
PEO/MSO	6387	1042	1050	\$105
FACS	4796	1559	1655	\$166
SINGLE	4925	12189	5973	\$597

**Merged PMSC  
Supporting PEO**

**AMC**

**Land Combat Systems  
Command  
(MG)**

**DSA  
(BGT)**

**DECG for  
Engineering  
(BGT)**

**DECG for  
Sustainment and  
Industrial Readiness  
(BGT)**

**Deputy for  
Corporate  
Management**

**DECG for War  
Reserve  
(BGT)**

**PM-FMTV**

**PM-TAWS**

**PM-LAV**

**PM-HTV**

**PM-LTV**

**PM-CMS**

**ARDEC**

**TARDEC**

**QA & Test**

**IMMC**

**Warren  
ACALA  
SMCA**

**DAC**

**IBM**

**Plants  
Arsenals  
Depots  
Commercial  
Other Svcs & Missiles**

**Information  
Management**

**Installation  
Support  
(BASE Ops)**

**Acquisition  
Center & PARC**

**Environmental  
Management**

**Resource  
Management  
(includes HRI)**

**Special Staff:**  
• PAO  
• Counsel  
• EO  
• Small Business  
• IG

- 1 TACOM and IOC
- 2 Formerly EDCA
- 3 Appropriation Director

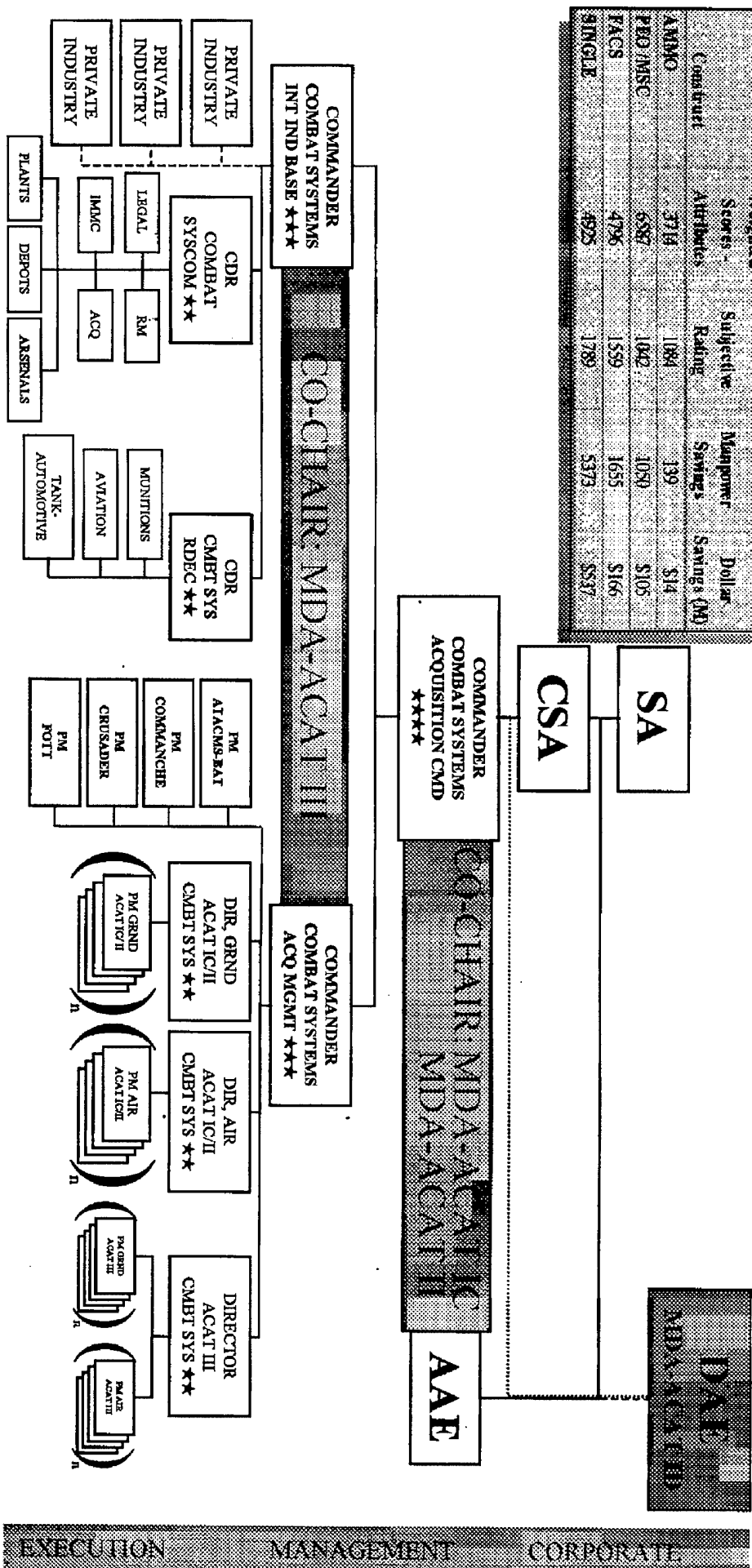


# ARMY PARADIGM SHIFT

## ("Family Affair-Combat Systems")

Corrected Copy  
18 Aug 98

Weighted Scores -		Subjective		Mapower		Dollar	
Construct	Attributes	Rating	Savings	Savings	(M)		
AMMO	3714	1184	139	\$14			
PEO INSC	6587	1042	1050	\$105			
FACS	4796	1559	1655	\$166			
SINGLE	4925	1789	5375	\$537			



- Integrates all elements of the industrial base (Gov and private industry) for Army combat systems and ties them to the "Corporate Best Value" decisions
  - Private sector utilized to the maximum (includes tech base, RDT&E, production, transportation, handling, storage, surveillance, and demit)
  - SYSCOMs responsible for transportation, handling, storage, surveillance, and demit
  - Single RDEC for combat systems includes platforms, launchers, and munitions
- Ensures full system integration (platform, launcher, and projectile) for system unique munitions and full coordination with platforms for common systems-A SYSTEM OF SYSTEMS APPROACH
- Separates systems management from execution VERTICALLY (a continuum depending on function-the CORPORATE FOCUS) as well as HORIZONTALLY
- "Best Value" decisions made at the Corporate level with input from the management level which was developed at the execution level.
- Keeps ACAT IC programs-AAE co-chairs with Cdr, CSAC (replaces VCSA as ASARC co-chair)
  - Could be expanded into a total "Technology/Acquisition/Logistics Command" by adding:
    - Cdr, Combat Support SYSCOM
    - chem/bio and CB elements under Cdr, Systems RDEC
    - Dir, ACAT IIC/II Cmbt Spt Systems under Cdr, Systems Acq Mgmt
    - ACAT III Cmbt Spt Systems under Dir, ACAT III Systems

End



**(“Family Affair-Technology/Acquisition/Logistics Command”)**



Corrected Copy  
18 Aug 98

```

graph TD
    SC["SERV CHIEF  
(CJCS)"]
    DAE["DAE"]
    CSC["COMMANDER  
COMBAT SYSTEMS  
ACQUISITION CMD  
*****"]
    MDA1["MDA-ACAT I"]
    MDA2["MDA-ACAT II"]

    SC --- DAE
    SC -.- CSC
    DAE --- MDA1
    CSC --- MDA2
  
```



# WIPR ORGANIZATION COMMENTS

CONSTRUCT	AMMO CMD	PEO/PM w/ MERGED MSC	FACS/ TALCOM	SINGLE SERVICE	OTHER
<b>ORGANIZATION</b>					
OSD/OTHER SERVICES					
USD (A&T)			X	investigate	
EDCA		X	investigate		
U.S. NAVY	ok	ok	ok		
HQDA					
ASA (FM&C)		X			
SARD-ZS		X	serious look		
DCSOPS			X		
PA&E			X		
PEOs					
AMD		X			
AVN		X			
GCSS		X			
<b>TACTICAL MISSILES</b>		X			
AMC					
DCSAMMO		X			
DCSRDA		X (w/mods)			
AMCOM		X			
IOC	X				
TACOM					X
INDUSTRY					
ALLIANT		X (leads)	X (follows)		
ARMTEC		X			
<b>TOTAL</b>	<b>2</b>	<b>13</b>	<b>7</b>	<b>1</b>	<b>1</b>

STAFF DRAFT

# COMPARISON OF CONSTRUCTS

CONSIDERATION	CONSTRUCT	AMMUNITION COMMAND	PEO/PM w/ MERGED MSC	FACS/ TALCOM	SINGLE SERVICE
MANAGES ALL ACAT LEVELS	YES NO	X	X	X	X
LEVEL OF PAA APPROPRIATION MANAGER	MSC/PEO MACOM DA/DOD	X	X	X	X
MUNITIONS MANAGEMENT	AMMO MISSILES	X	X	X	X
INTEGRATED SYSTEMS MANAGEMENT	AMMO LAUNCHER PLATFORM	X	X	X	X
INTEGRATES MUNITIONS INDUSTRIAL BASE via	COORDINATING OFFICE INTERNALLY	X	X	X	X
INTEGRATES TECH BASE	YES NO	X	X	X	X
SEPARATES MGMT & EXEC	HORIZONTALLY VERTICALLY	X	X	X	X
CONSTRUCT APPROVAL AUTHORITY	AMC DA OSD	X	X	X	?
LEVEL OF CORPORATE BEST VALUE	MSC/PEO DA DOD	X	X	X	X
INTEGRATES REQUIREMENTS w/LIFE CYCLE MANAGEMENT	YES NO	X	X	X	X
TIME TO EXECUTE	IN YEARS	2	3	4	8

# Graybeard Comments

- Each construct addresses a different problem. A fundamental question becomes, do we address ammunition only or the larger reorganization task facing AMC?
- Separating guns from ammo is a "fatal flaw". Integration problems have arisen in sustainment as well as RDT&E and production.
- AMC PMs are second class citizens; PEO PMs make it to BG (criticizes both the Ammunition Command and the PEO/PM w/Merged MSC constructs).
- Procurement drives the industrial base which should be an issue for the uniformed Service and not the Secretariat (criticizes the PEO/PM w/Merged MSC Construct).
- Answering the critical question, "where will acquisition be in the Army organization," will shape AMC's future. Combining Technology, Acquisition, and Logistics in a single organization may be a good strategy.
- The PEO/PM w/Merged MSC construct is seen only as an incremental step; something broader will be required for a post 2002 AMC; maybe TALCOM, maybe something different.
- FACS and TALCOM may provide a way (or a springboard) forward.
- Merging AMC and the PEOs is probably not as dramatic a reorganization move from the Army perspective as it would appear. While it [TALCOM] would be difficult politically to pull off, it would probably generate some good press for the Army just by proposing it.
- Congressional constraints will limit the Army's ability to close or privatize plants, arsenals, and depots.
- Constructs that further migrate responsibilities to Joint Agencies or the Secretariat should be resisted (specifically Single Service).
- Strong roles and responsibilities on the SARDAs side are defining characteristics of the organizational structure that would have to be clearly defined.
- An organizational change within the Army will not solve industry's problems (funding and foreign competition). However, placing the Appropriations Director at the highest level possible would assist.

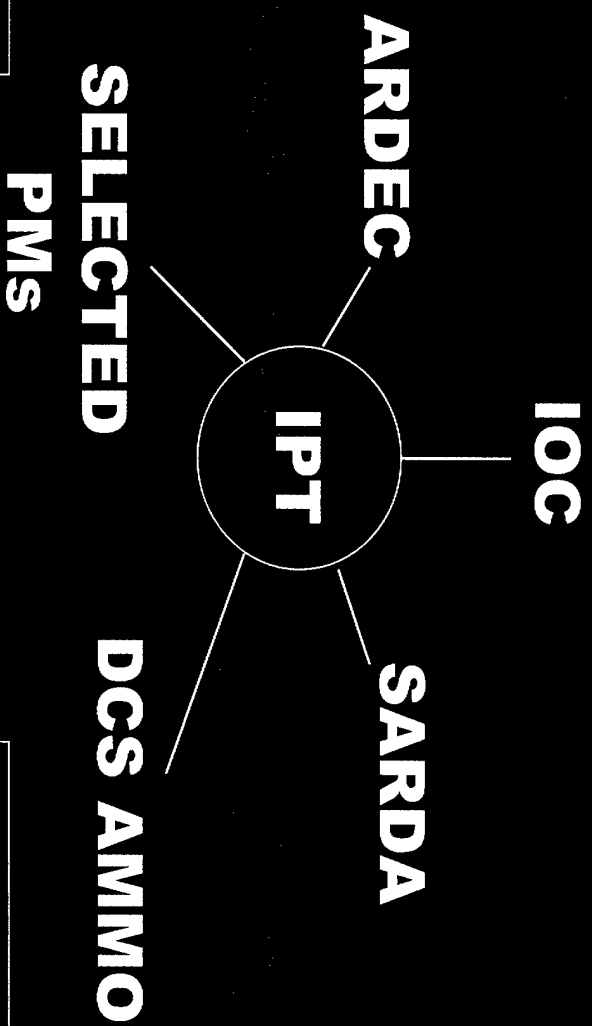
# BUSINESS CASE IPT

RELEVANT



Jean L. Ligeno  
Industrial Operations  
Command  
DSN 793-6894

# TEAM COMPOSITION



Jean Ligeno  
IOC Chair

RELEVANT

READY

Tom McWilliams  
TACOM-ARDEC  
Vice Chair

# BUSINESS CASE IPT BACKGROUND

## PNNL STUDY

Assess current munitions base

Ammunition Production Base is:

- Oversized
- Inefficient
- Inflexible
- Obsolete

RELEVANT

IR PROGRESS

READY



PNL  
STUDY

# BACKGROUND (continued)

GEN Wilson e-mail GEN Reimer - 28 Jul 97

– Agree in Principle with Recommendations

Manage base through competition vs.  
workloading

Commercialize organic base

Smart acquisition practice - long term,  
consolidation, link peacetime/  
replenishment

Consolidate munitions management

**2 or 3 prototype plants**

**2 IPTs**

RELEVANT

REPORTING



# 2 PRONG APPROACH

**AMMUNITION  
FAMILY BUSINESS  
CASES**

**Integration**

**Prototype  
Plants**

RELEVANT

ELIGIBLE

READY

# AMMUNITION FAMILY BUSINESS CASES

*Institutionalize Process*

MORTARS  
PM - LEAD  
IOC - Requirements  
- Replenishment

ARTILLERY

TANK/  
MED CAL

SMALL  
CAL

MINES

Replenishment Options  
Multi-Year  
Consolidated Buys  
Competition

*Component Integration*

No Cookie Cutter Approach



# PROTOTYPE PLANTS PRELIMINARY REVIEW

XMAT  
Active  
(HOLSTON)

Louisiana  
Inactive

Scranton  
Inactive

On-going  
Actions

Reviewed Against Site  
Manager Attributes of the  
Study. XMAT met 14 out of  
16 Attributes. Louisiana met  
12 and Scranton 10.

RELEVANT

RESPONSIVE READY

# PHASED SITE MANAGER CONCEPT

Competitive  
Facility Use  
Contract

Size  
Base

Site Manager

Commercialization

Lease

Commercialization

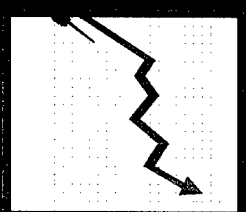
Profit  
Stabilization  
Threshold

Risk  
Minimized

Sale

Privatization

Ammo Family Business Case Input



# Actual Cases

FY 98/99	Small Caliber Competition
FY 98/00	Metal Parts
FY 02/03	Load, Assemble & Pack
FY 03/05	Propellant

RELEVANT

RELEVANT READY

# PRODUCTION BASE ASSESSMENT

## IMPLEMENTATION PLANNING SCHEDULE

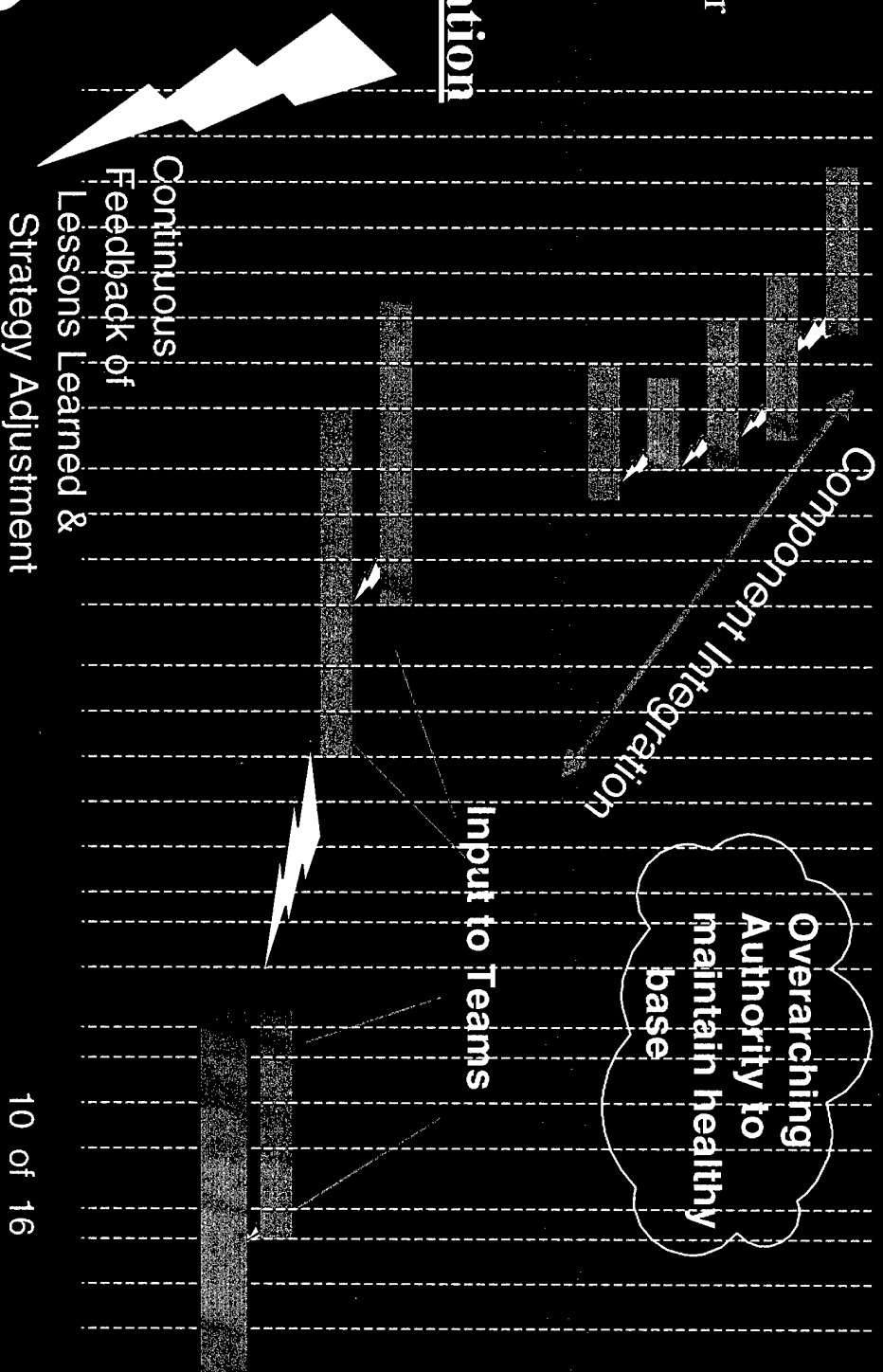
Ammo Family    FY97    FY98    FY99    FY00    FY01    FY02    FY 03

1 2 3 4    1 2 3 4    1 2 3 4    1 2 3 4    1 2 3 4    1 2 3 4    1 2 3 4

Mortars  
 Artillery  
 Tank/Med Caliber  
 Small Cal  
 Mines

### GOCO Operation

Small Cal  
 Metal Parts  
 LAP  
 Propellants



# ITEM 1

Manage the base through competitive acquisition rather than direct workloading of plants.

**ACTION:** Increase Competition

**EXAMPLES:** IOC Plan to be out of GOOCO workloading by 2001  
XMAT  
Mortars  
Tank Ammo  
Ammunition Family Business Case  
Longhorn





## ITEM 2

**Commercialize the organic base: Make it work for us.**

**ACTION:** Selected prototypes.

**EXAMPLES:** XMAT

Scranton

Louisiana

Proposed schedule for GOCCO

Competitions to size base.

Small Cal (LCAAP) Competition team

established.

5-Excess Plants

- Badger, Indiana, Kansas (partial), Sunflower, Volunteer

RELEVANT

RESPONSIVE

READY

# ITEM 3

Stabilize the market through smart acquisition practices - longer-term consolidated procurements - link peacetime and replenishment requirements contractually.

**ACTION:** Started Ammunition Family Business Case Sub-IPs  
Implementing Acquisition Reform  
Developed methodology to incorporate replenishment into Best Value competitive contracts

**EXAMPLES:** Procurement Consolidation - Most med cal 25/30mm  
Tank Training Ammo  
M865/M831  
Grenade Fuzes M213/M228  
120mm Mortar

Multiple Year Procurements - (Rule rather than exception)  
- Med cal (5 yrs)  
Tank Training FY 95-98/FY 99-03  
M550 Fuze  
Hand Grenade Fuzes M213/M228  
120mm Mortar

RELEVANT

RESPONSIBLE

READY

# POLICY

## SARDA 98-1

- **Manage ammunition using DOD's life-cycle acquisition process.**
- **Use acquisition reform initiatives to stabilize the business environment and provide incentives for private investment in the production base.**

RELEVANT

DEFENSIVE

READY

# POLICY SARDA 98-1

## (CONTINUED)

- Rely on the private sector to create and sustain ammunition production assets in response to production and replenishment contracts.
- To the maximum extent feasible, transition government-owned ammunition production assets to the private sector while preserving the ability to conduct explosives handling operations safely.



# CONCLUSIONS

1. Developed timeline for completion of Ammunition Family Business Cases and actual ammunition plant cases.
2. PNNL recommendations will work for some families of ammunition and plants but cannot be a cookie cutter approach.
3. Site Manager Concept needs to be a phased approach.
4. Army initiatives already underway match PNNL recommendations.
5. IPT will be dissolved and monitoring of the planned actions will be accomplished by DCS Ammo.

RELEVANT

RESPONSIBLE

READY



# SOUNDBYTES

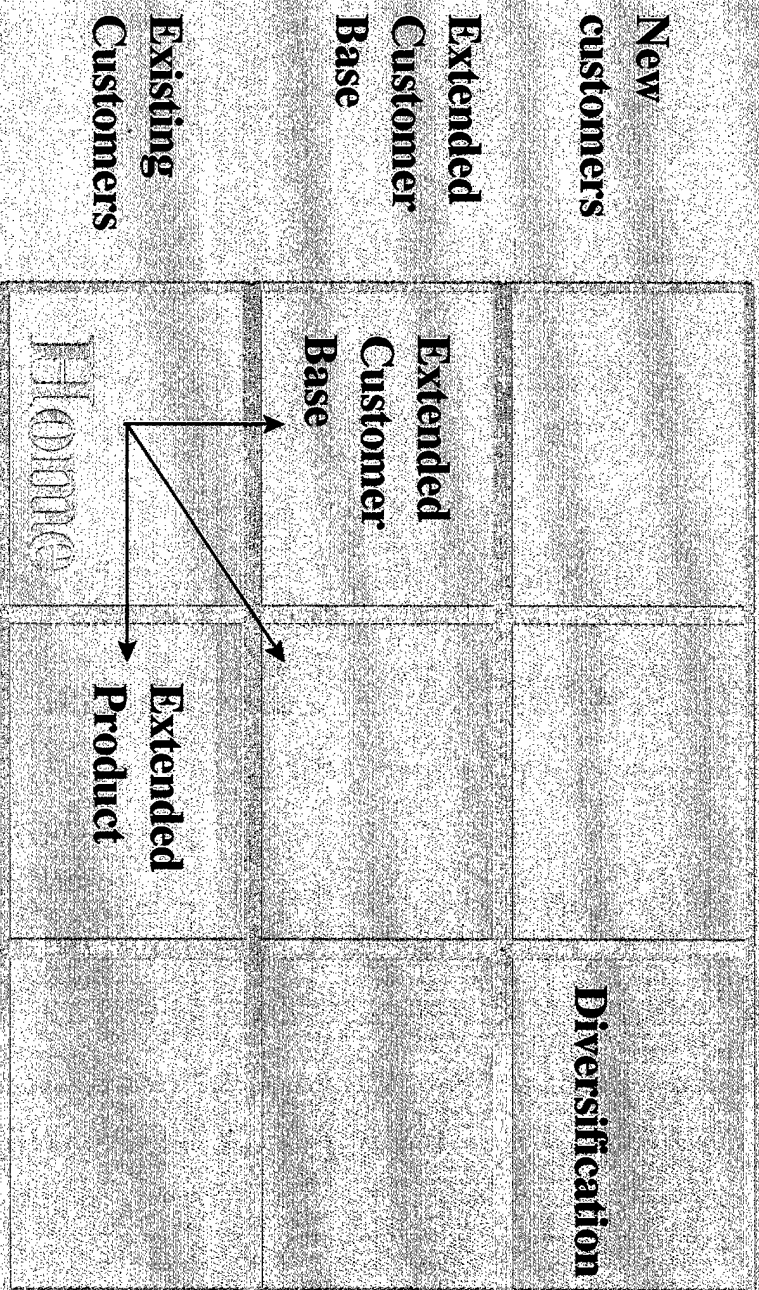


# Munitions Executive Summit

- 50 Years of base adjustments
  - WWII
  - Vietnam
  - 1998 - Talley Defense Systems
- Semon



# Business Spectrum



Product Technology





# Business Spectrum

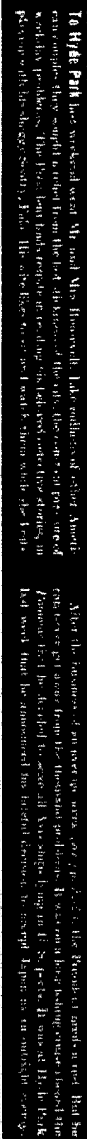
- **Products:** Hardware, Warranty, Service, Quality, Rate of Technological Change, Regulations, *Product Liability*
- **People:** Skills, Wages, Benefits, Education
- **Plant:** Environmental, Location, Transportation
- **Market:** Competition, Brand Loyalty, Sales Methods, Credit policies, *Buying Motivation*



# Consumer Motivation

• Aren't you glad you  
use Dial. . . don't you  
wish everyone did?"

**PRESIDENT AND MRS. ROOSEVELT PLAY WITH FALA, READ AND RELAX ON LONG WEEKENDS**



# 1950's Presidential Image

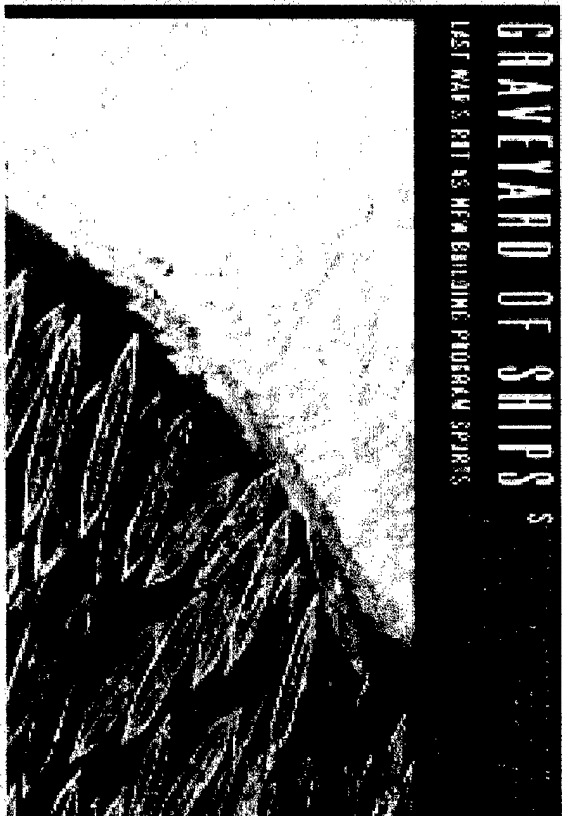


MR. TRUMAN TODAY,  
STILL CAMPAIGNING

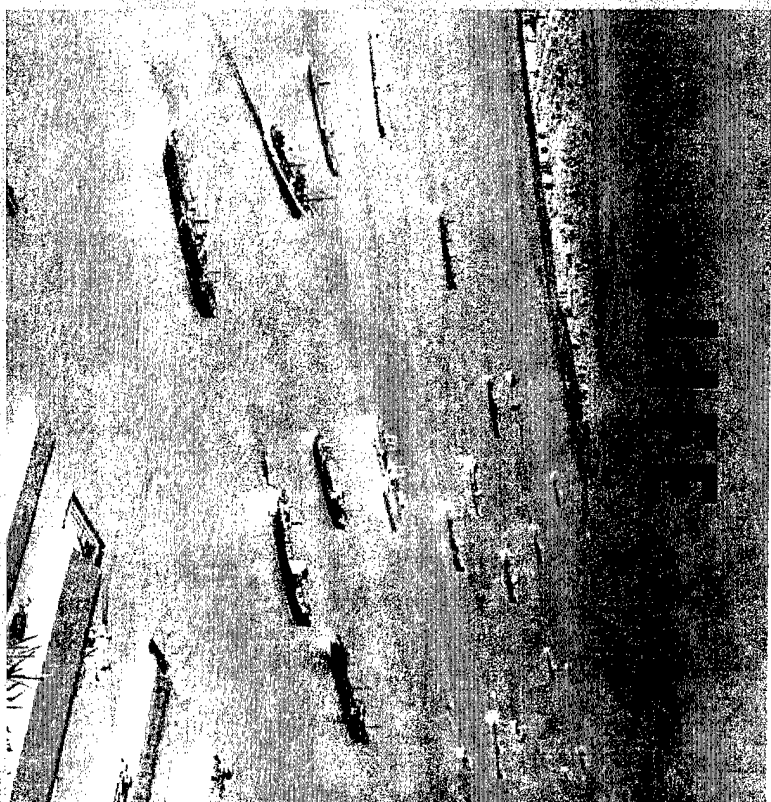
# Shipbuilding Miracle - Kaiser

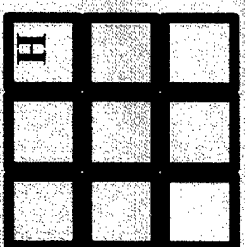
## GRAVEYARD OF SHIPS

LAST WAR'S LEFT AS NEW BUILDING PROGRAM SPURNS

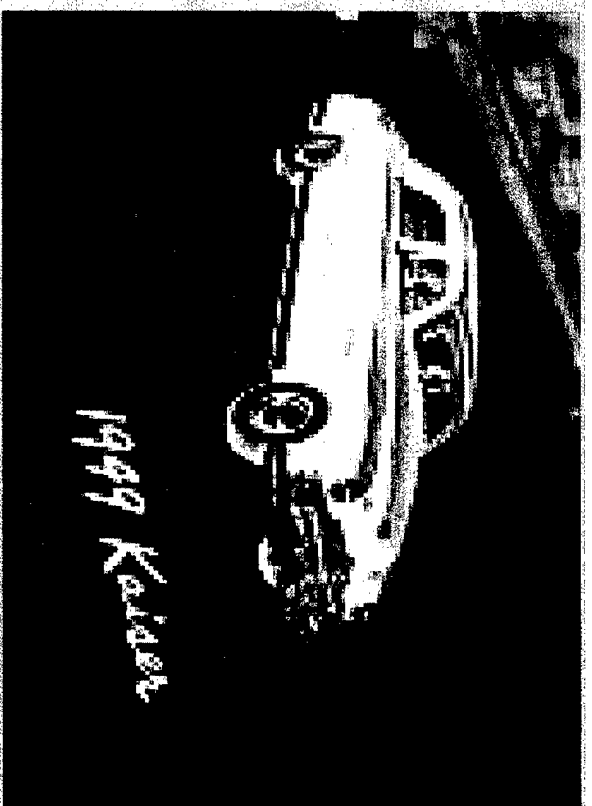


- \*Liberty ships
- \*Escort carriers





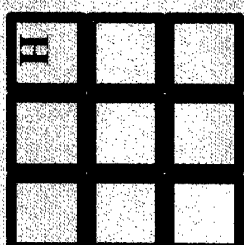
# Kaiser's Lament



“I knew it would be risky, but I never expected my \$400 million to disappear into the automotive pond without even a ripple.”



# J.C. Higgins



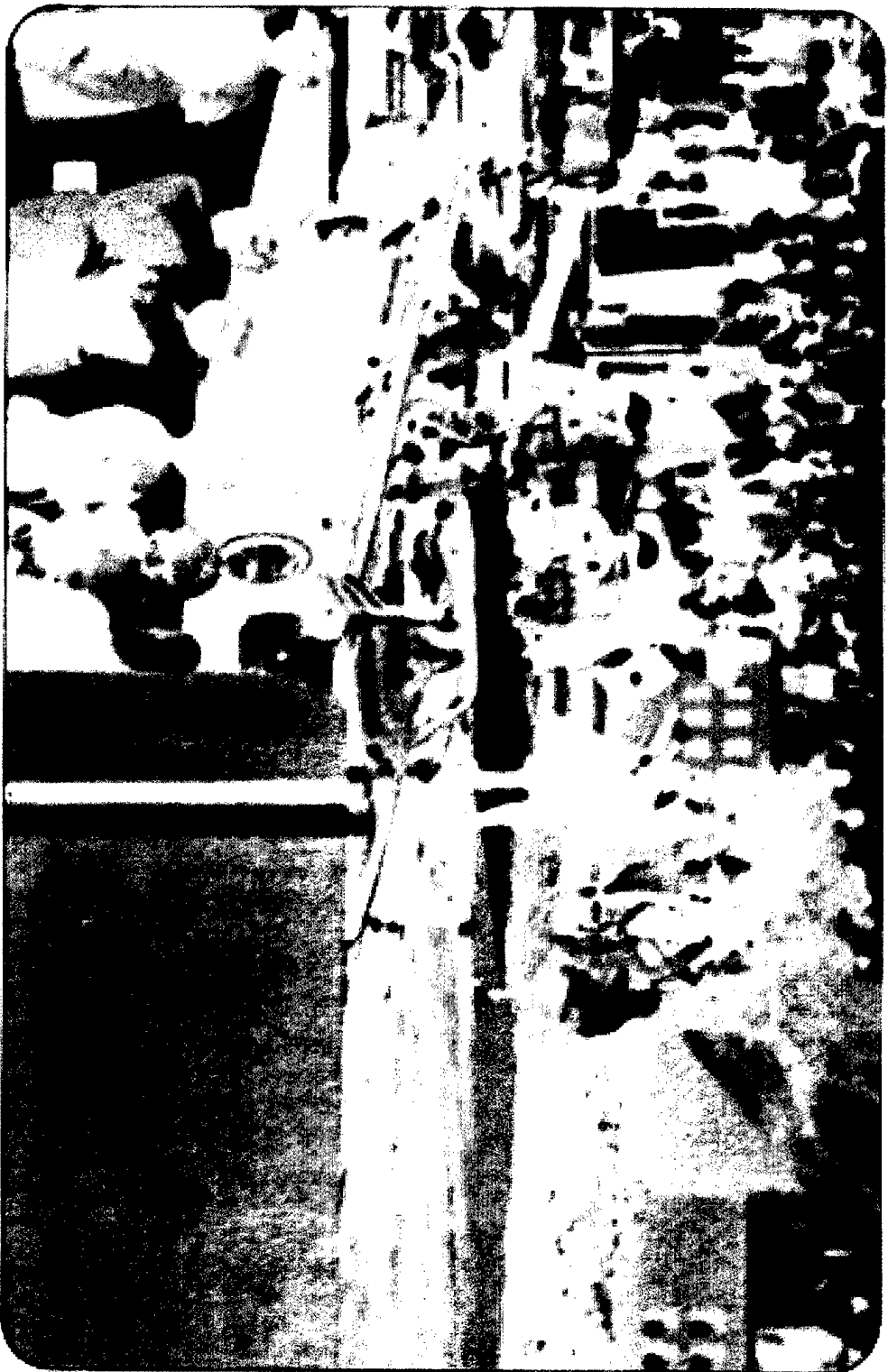
FREE! More Cycles

Schwinn Built Bicycles  
GUARANTEED FOR LIFE

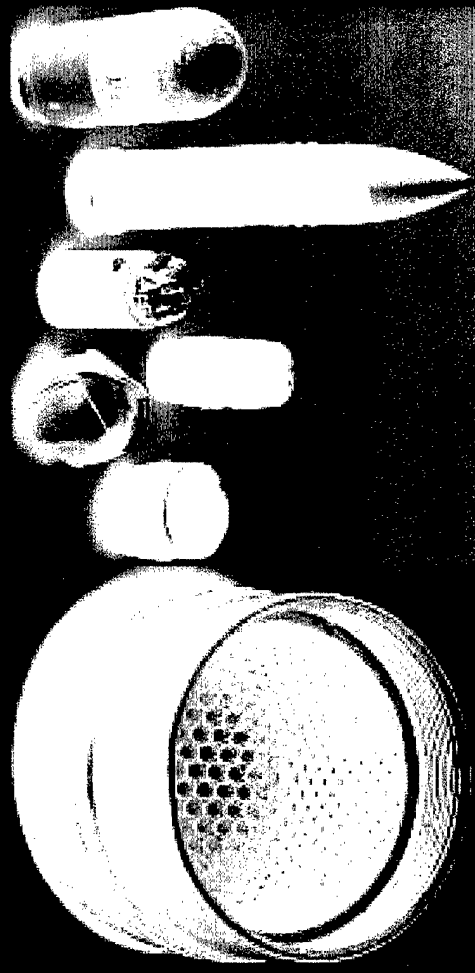
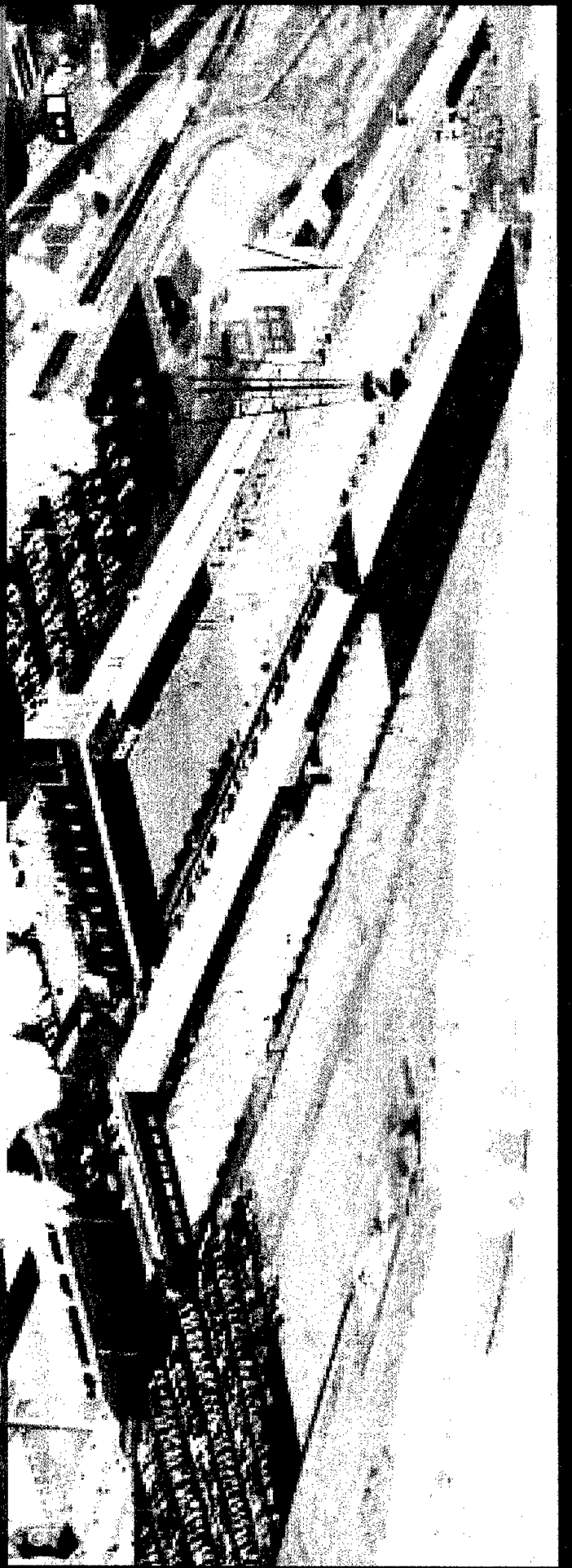
**Schwinn-Built Bicycles**  
GUARANTEED FOR LIFE

J.C. Higgins bikes never made Schwinn sweat!.

# Vietnam Era





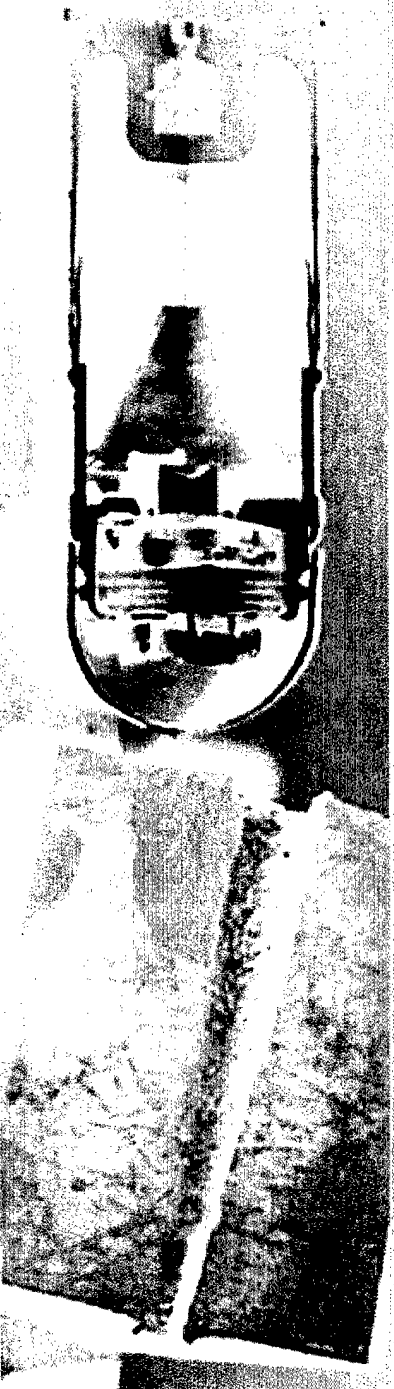


AVCO ORDNANCE DIVISION



# AVCO Developments

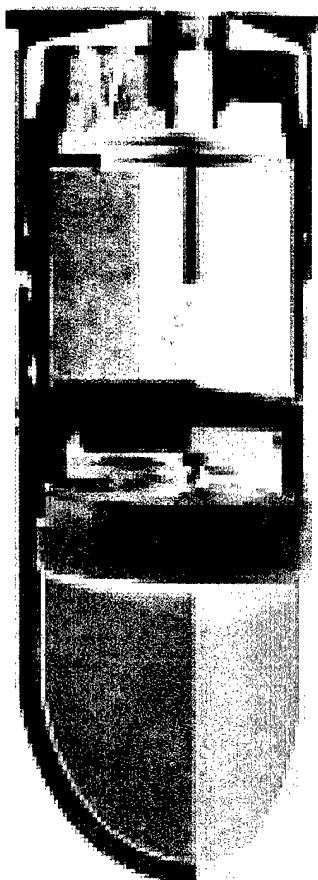
- Cost effective, "Cavitating" fragments
- ICM munitions
- 40mm DP ammo - first used in Desert Storm
- M42/M77 grenade - "Steel rain"





MAXIMUM RANGE 200 METERS  
WEAPONS 40x46mm  
STATUS MODIFIED FIELD  
IN 1984

**XM683**



MAXIMUM RANGE 200 METERS  
WEAPONS 40x46mm  
STATUS MODIFIED FIELD  
IN 1984

**XRM79**



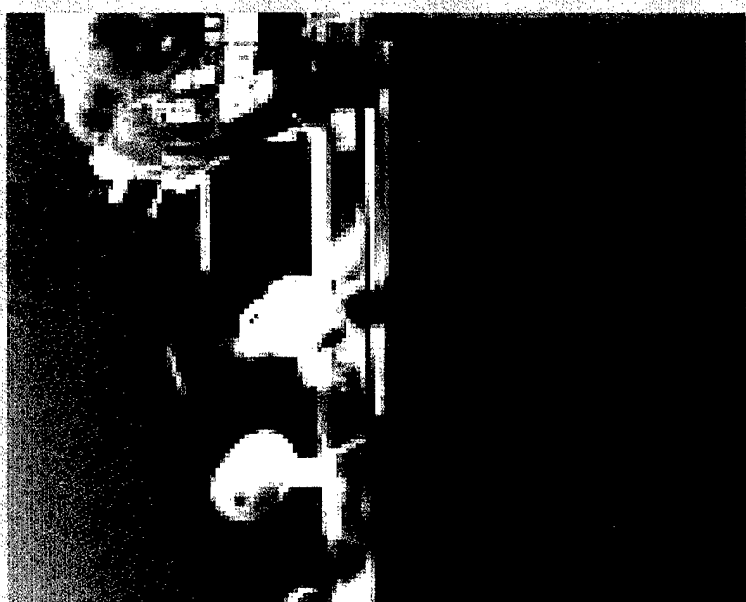
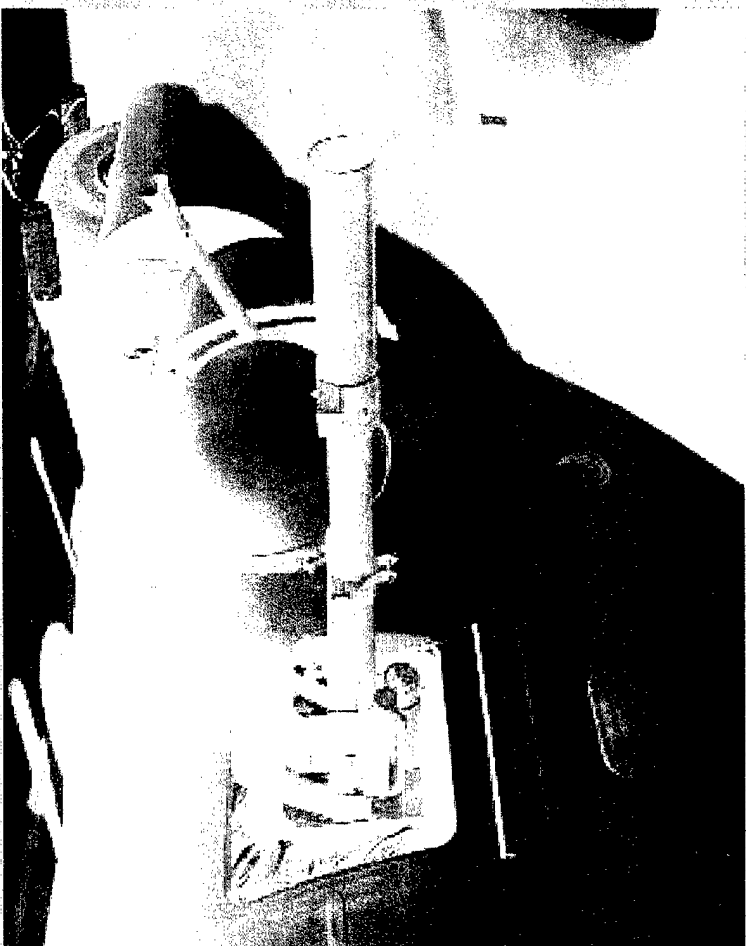
*XRM79 Dual Profile*



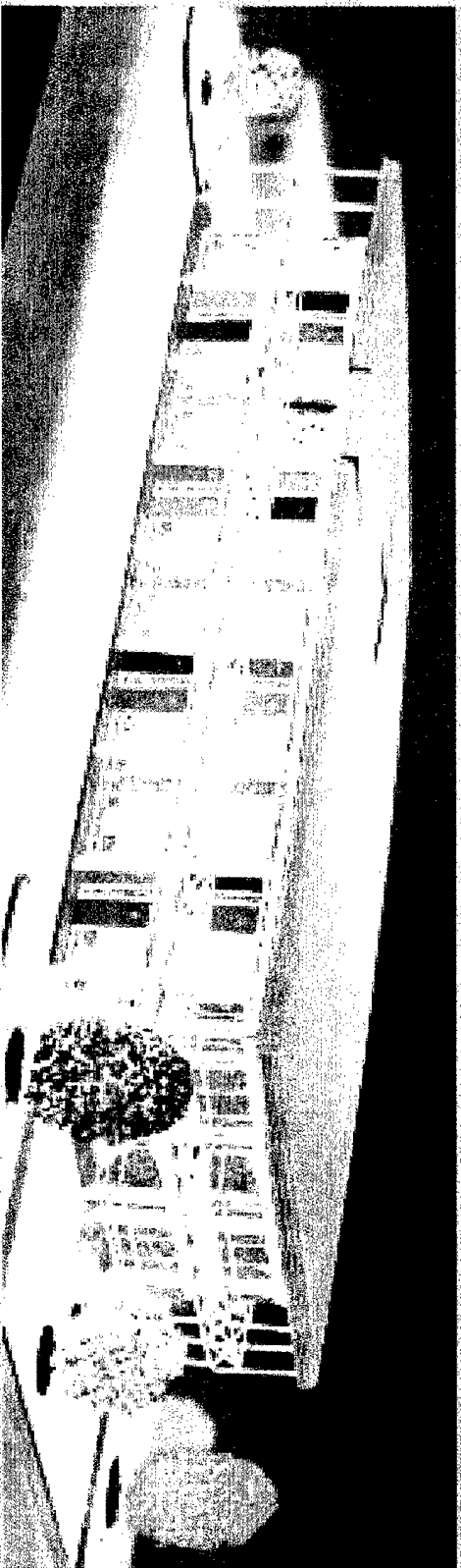
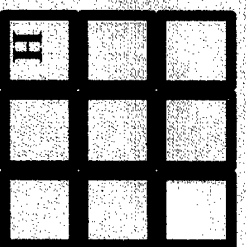
- Line of sight 40mm
- Behind wall effects
- Dual Purpose
- Grenade insertion

# Other AVCO Contributions

☼ Initial mounts of both 40mm Bofors and 105mm on USAF gunships



# Modular Motel units



- 
- Dedicated 25% of factory space
- Built four motels
- Hidden costs killed program

# Consumer Product Lure

- Early TV maker - Competition victim
- AVCO Embassy motion pictures stockpile
- Cartrivision Patent License
  - Three head tape playback system
- 200,000 sq. ft. NASA level "Clean room"
- AVCO isolated from marketing & sales



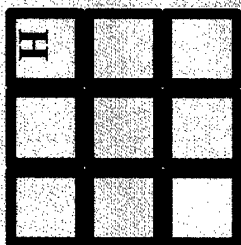
*Proslay Content*





1. *Introduction*  
 2. *Background*  
 3. *Methods*  
 4. *Results*  
 5. *Discussion*  
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# Cartivision

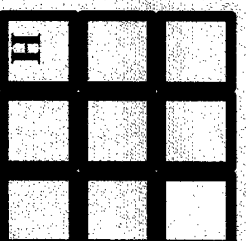


COMPETITION

A unique way of looking at things.



# Results



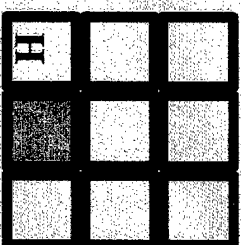
- 2800 units manufactured
- Engineering changes (tape head problems)
- Sears - Chicago first outlet
- Sales training cancelled
- Sold to consumers - 0
- Died in Fall 1972



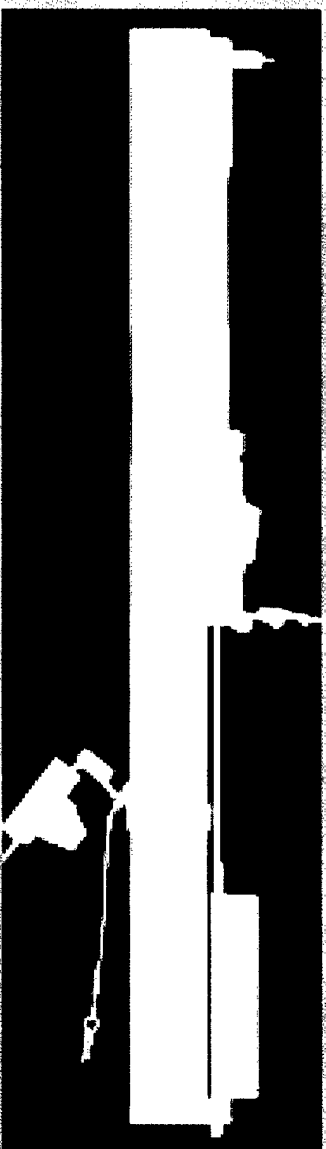
# **AVCO Precision Products**

- Shutdown announced January 1973
- Closed by Jan 1974
- 40mm rocket boosted, ICM self-destruct, other ordnance development stopped

# NI Industries Brockton, MA



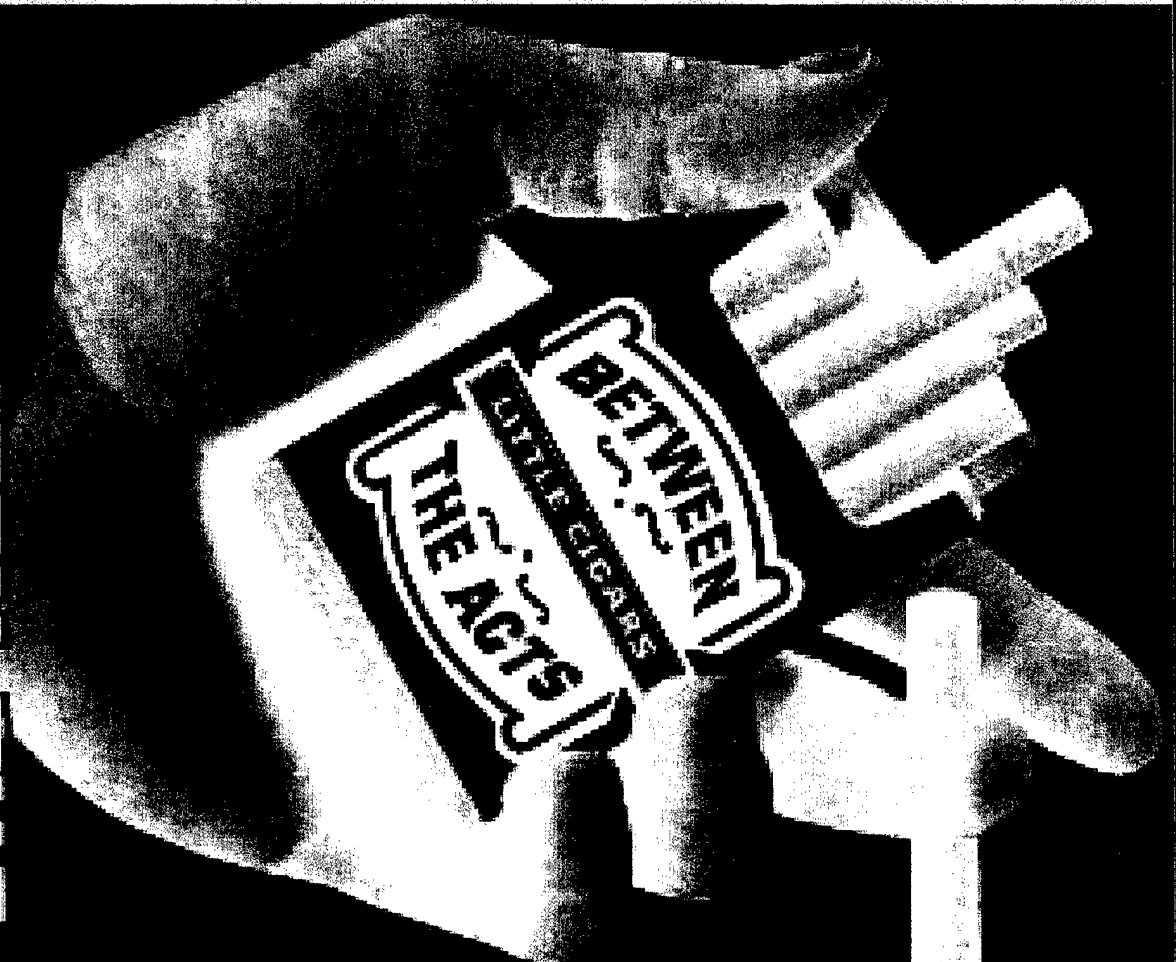
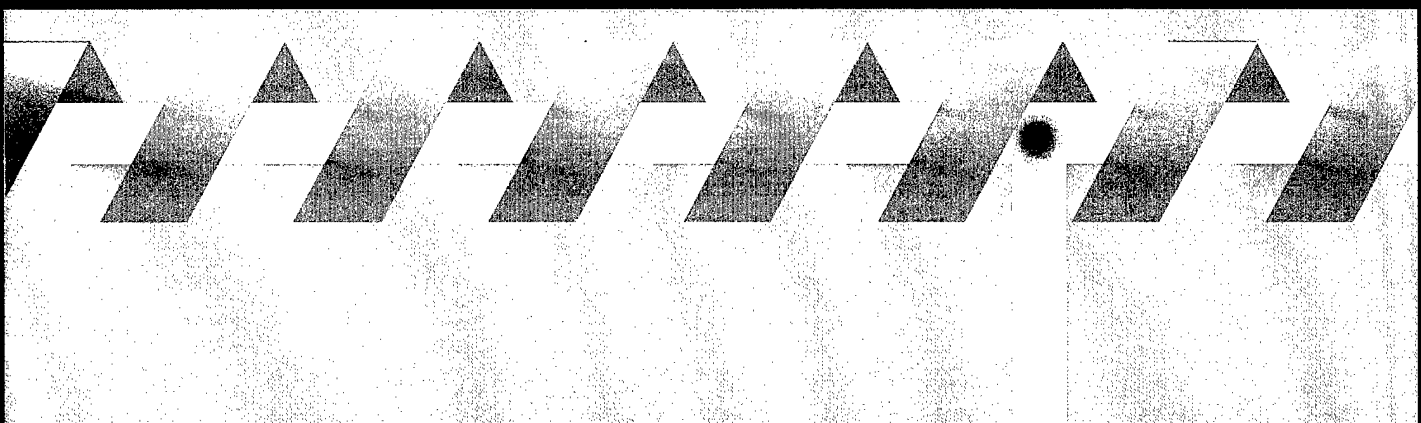
- Source for M72 launchers
- Converted at end of Vietnam
- NI Thermador (Luxury kitchen appliances)
  - Exhaust Systems
  - Compactors
- Products eventually went to Mexico





# **Post Vietnam Changes**

- US Auto market penetration
- Erosion of US national hard goods base
- World market awakens (Mexico \$10/day),  
China, Eastern Europe, PACRIM



Puff

lightly...

you

need not

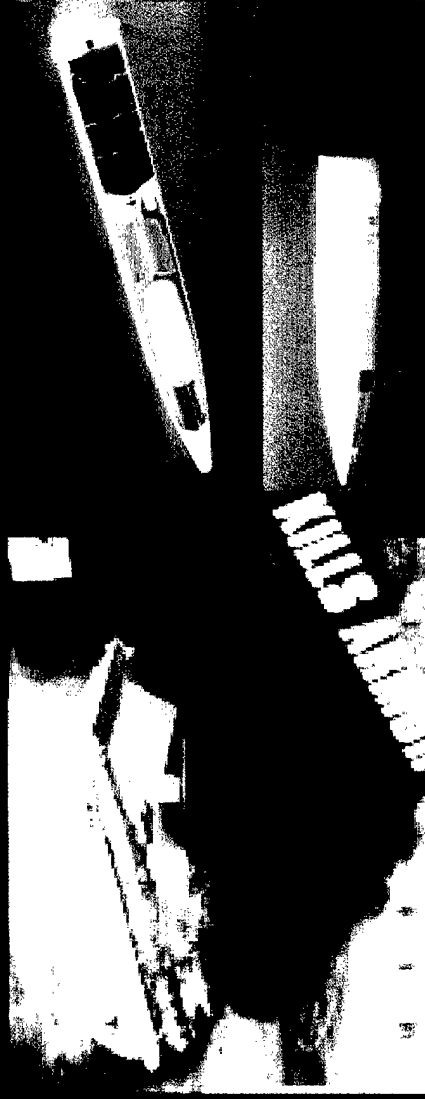
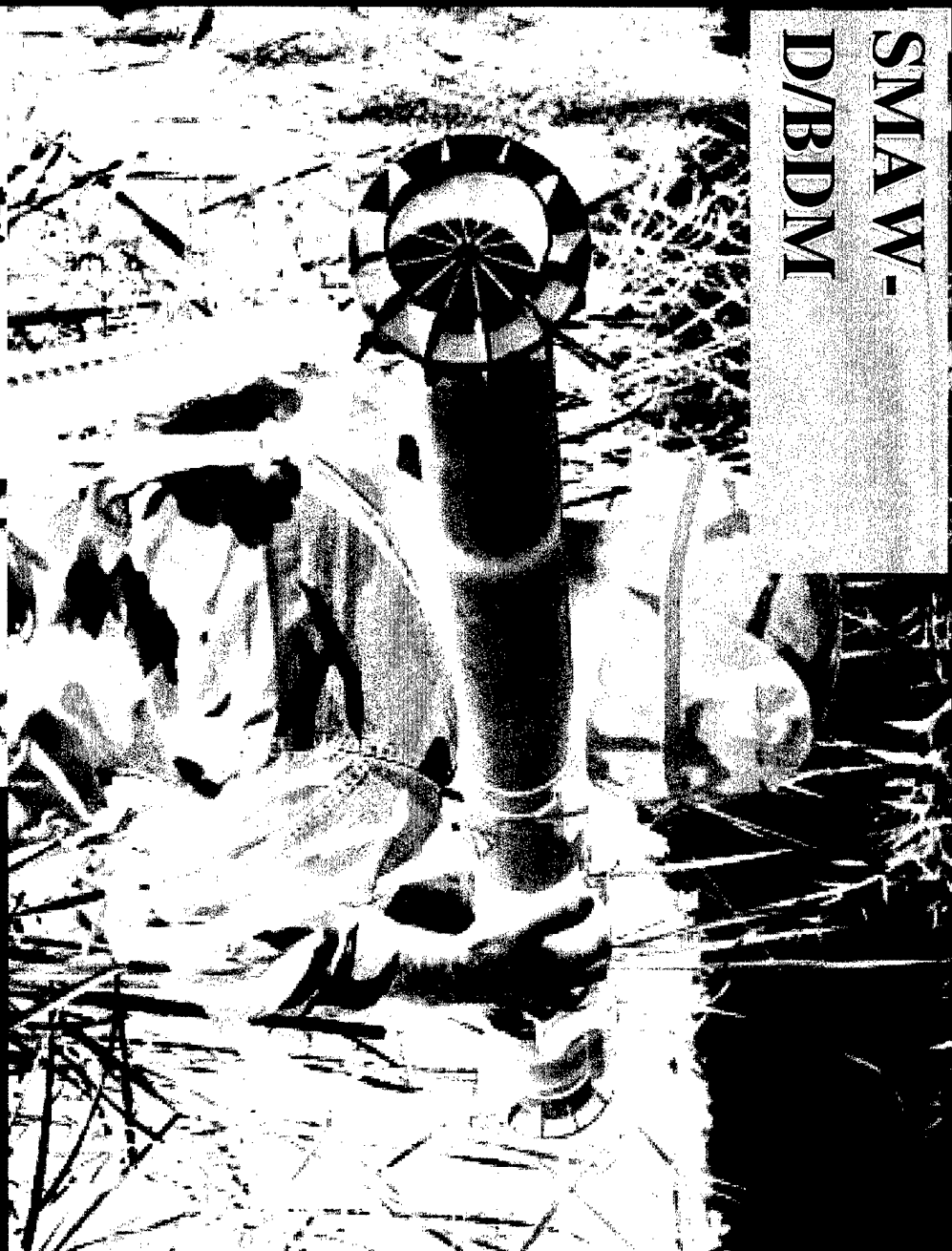
inhale

to enjoy

# BETWEEN THE ACTS

LITTLE CIGARS

# SMAW- D/BDM







# Talley Commercial Programs

- Auto airbag pioneer (Late 1960's)
- Transferred airbag technology to defense products (munitions dispersion)
- Escape slide inflators
- Fire suppression



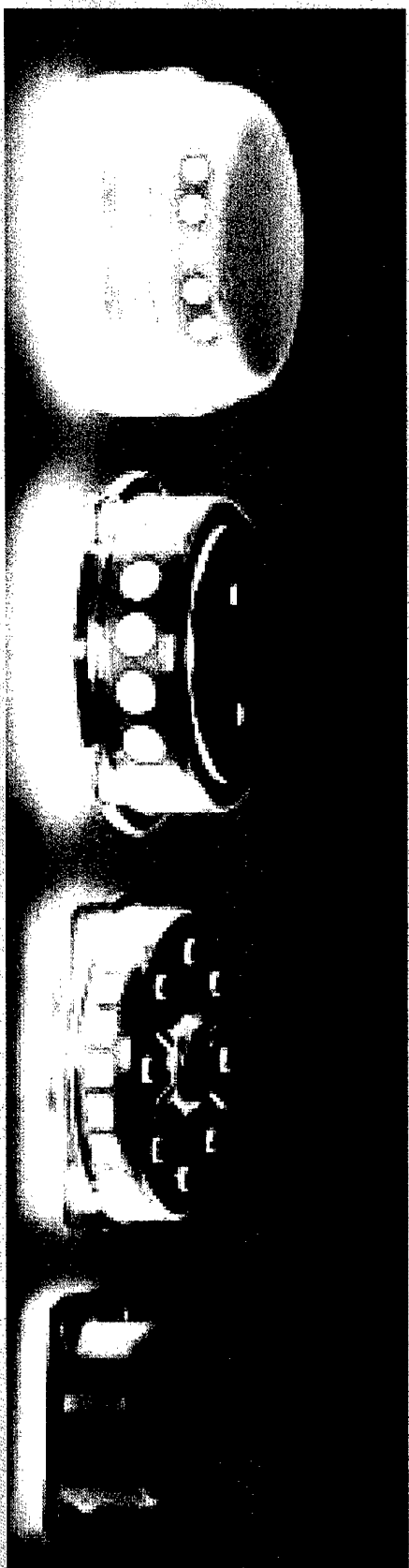
# Talley Airbag Milestones

- Invented Azide propellants
- Talley Market Share 1989 100% Ford driver; 80% GM driver; & 100% Honda Driver
- 1989 - Sale of airbag to TRW (\$ Hundreds of millions in sale & royalties)





# Charts showing inflator progression



Early 70s

Late 70s

Late 80s

Present



## **Post TRW Era (1994)**

- Talley develops non-azide inflator
  - Smaller, simpler
  - Less costly
  - Tighter performance
- Re-entered maturing market
- Formed Delphi (GM) JV
- Achieved re-entry in four years

# Talley Template

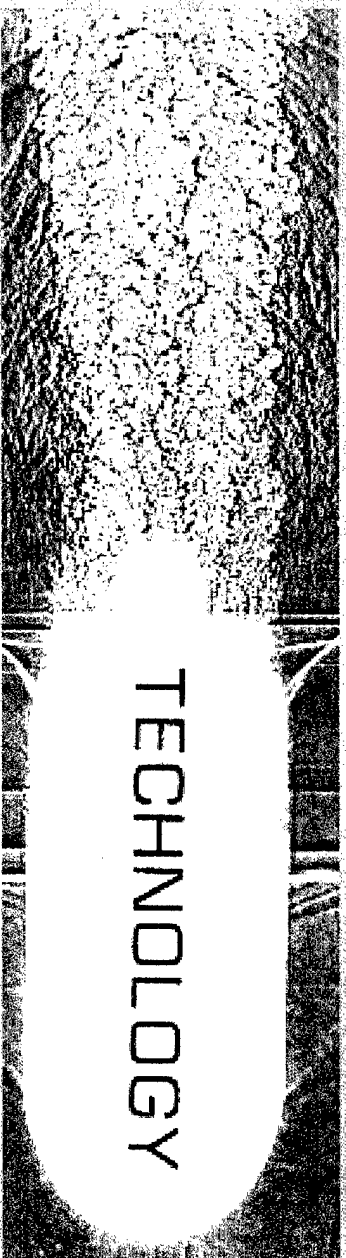
- Internal diversification
- Dual use propellant capability
- Technology development (Engineering, Propellant)
- Manufacturing advances
- Quality (CP2, ISO, QS)
- Marketing & sales

Markets


Products

Success lies in extending...

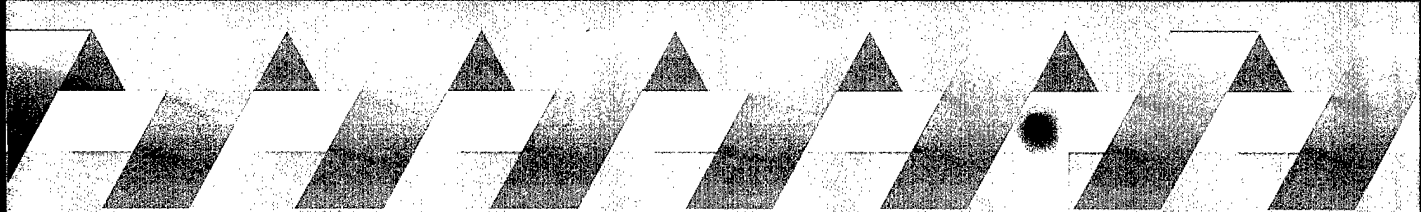
# What does the Army lose when the base is gone or too weak?



## AVCO Examples:

- Rocket ammo technology
- Grenade insertion
- Time to fire fast
- Behind target effect
- Dual Purpose rocket
- ICM self destruction





# **Most Probable Threat Reality [MPTR]**

- MPTR is no mystery
  - 1. OPTEMPO deployments (OOTW-Close combat, & Artillery fan fire support)
  - 2. Missile defense
  - 3. Terrorism
  - 4. Longer term needs (Countering Peer battlefield adversaries)





# Balance

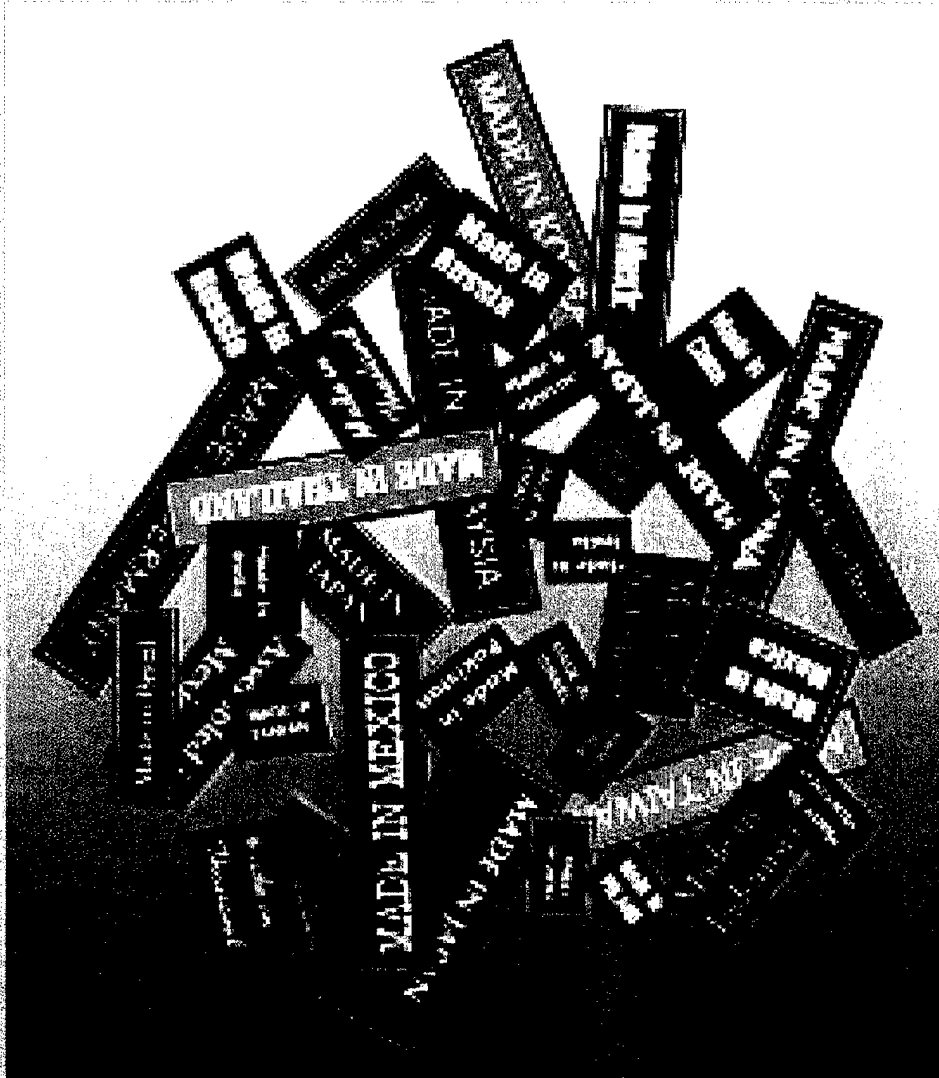
- Situational awareness ( **SA** ) kills nothing
- SA supported by effective weapons and ammunition mean capable defense
- *Balance* among SA, Leap ahead & effective close combat and fire support fan lacking
- *Too much* leap ahead is unaffordable
- Close combat technology base unsupported



# **Challenges For Army & Industry**

- There will be no defense without a balanced industrial base
- Technology moves forward, even if America ignores it
- DoD /Army have stake in the defense industry freefall

# Signs





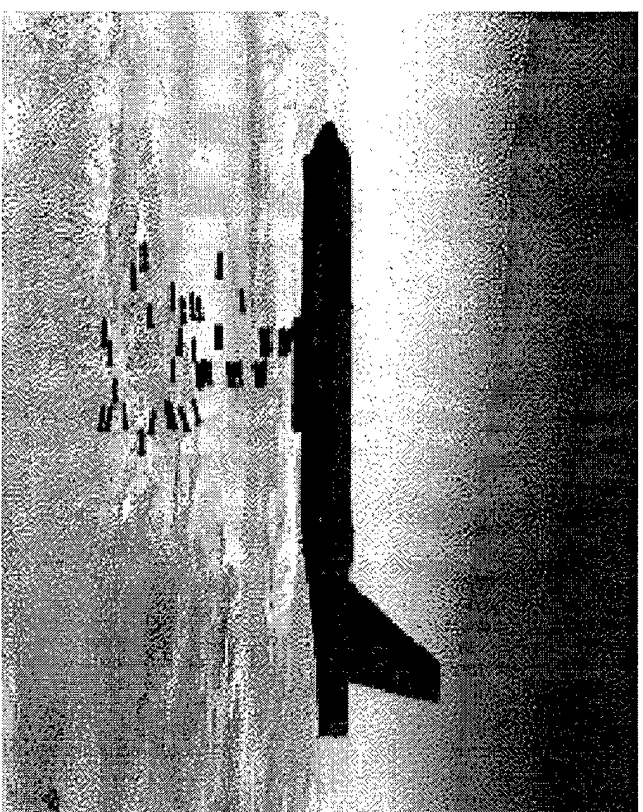
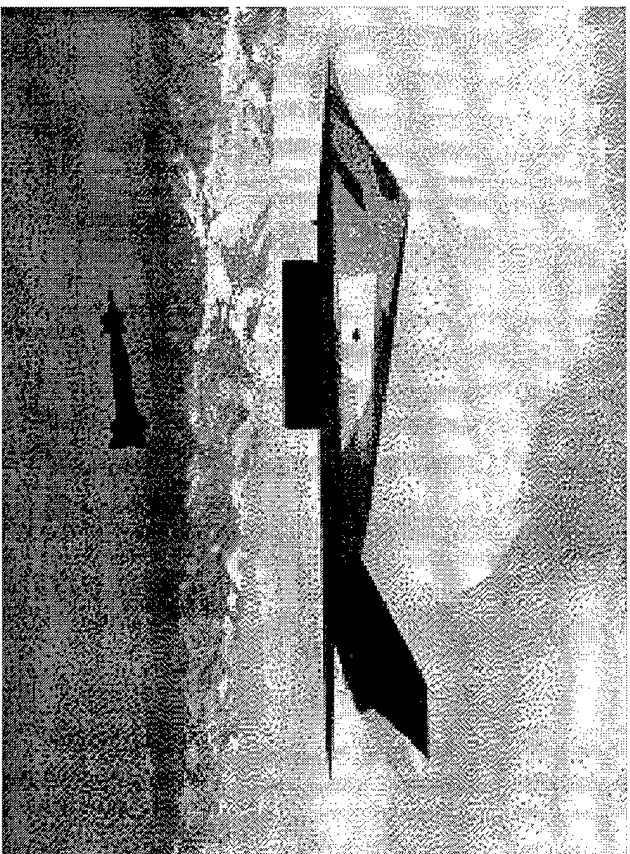


# Summary & Sermon

- ☉ Insufficient hard goods industrial base means insufficient combat power.
- ☉ Restore spending balance (SA/Leap ahead & killing systems)
- ☉ Forge hard goods base preservation policy - suddenly



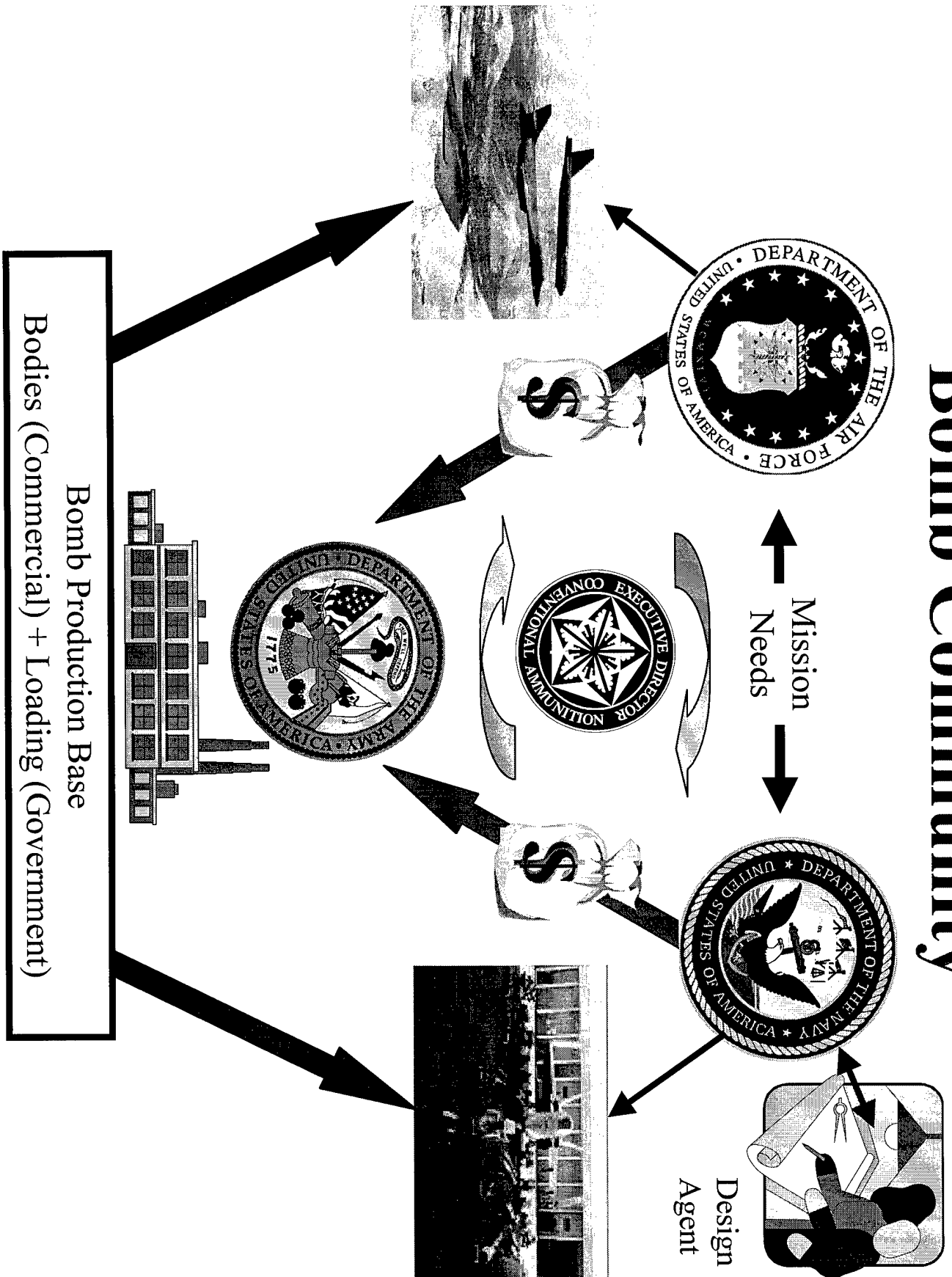
**Col Paul Brandenburg, USAF  
Deputy Executive Director**



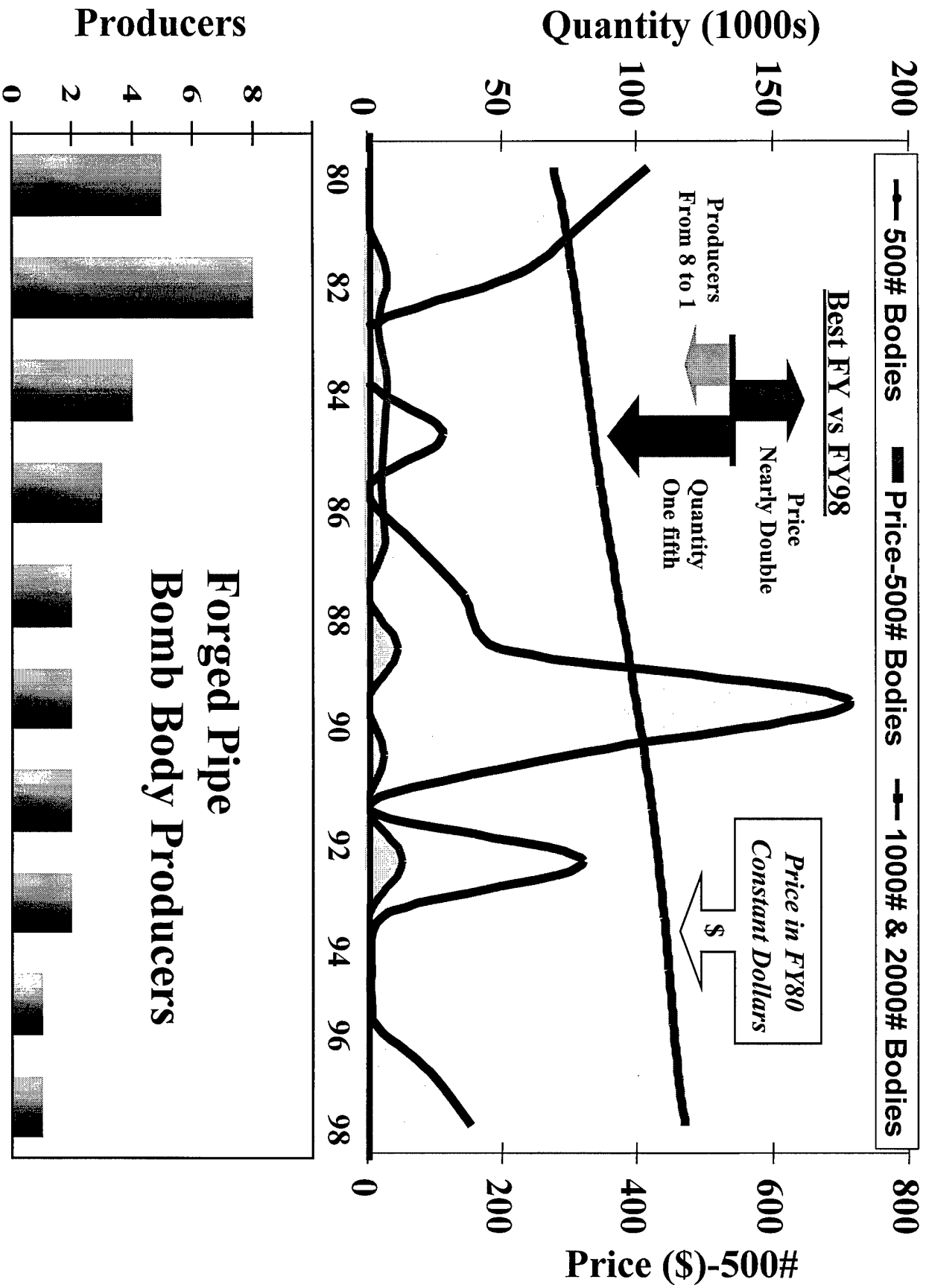
## **Introducing Cast Ductile Iron Bombs**

**A Joint Perspective**  
**15 September 1998**

# Bomb Community



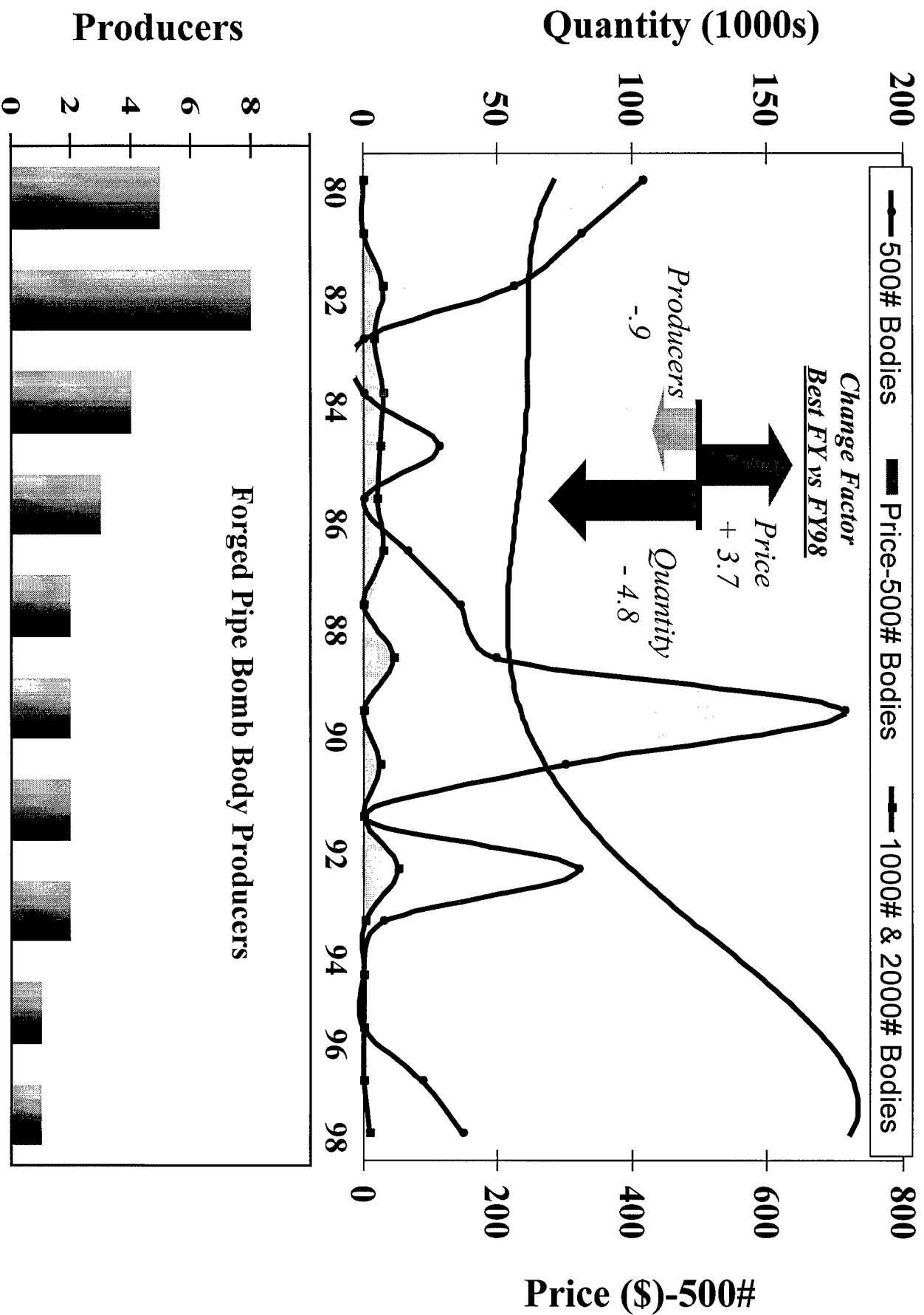
# Procurement, Price and Producer Trends







# SMCA Bomb Procurement, Price and Producer Trends





# INDUSTRIAL

## BASE

### (PREPARE THE ELEMENT)



# MUNITIONS REQUIRED

## Over 3-Year Period Following Conflict

	<u>NO. ITEMS</u> <u>PER FAMILY</u>	<u>QTY REQD</u> <u>IN 3 YRS</u>	<u>CANNOT</u> <u>SATISFY</u>	<u>POM</u> <u>BUYS</u>
ARTY	14	2,400,000	1	1
BOMBS	8	300,000	2	3
CANNON CAL	16	31,800,000		7
DEMO/MINES/GREN	32	5,100,000	4	16
DISP MUNITIONS	2	5,500,000		2
FASCAM	7	600,000		
FUZE	8	3,200,000		2
MORTAR	13	1,700,000		4
NAVY GUN	12	200,000		1
PROP CHG	4	2,200,000		1
PYRO	11	10,700,000		8
RKTS / WHD	20	1,200,000	1	3
SMALL CAL	19	1,400,000,000		12
TANK	3	130,000	1	1
	<u>169</u>		<u>9</u>	<u>61</u>

# CURRENT BASE POSITION ON REPLENISHMENT

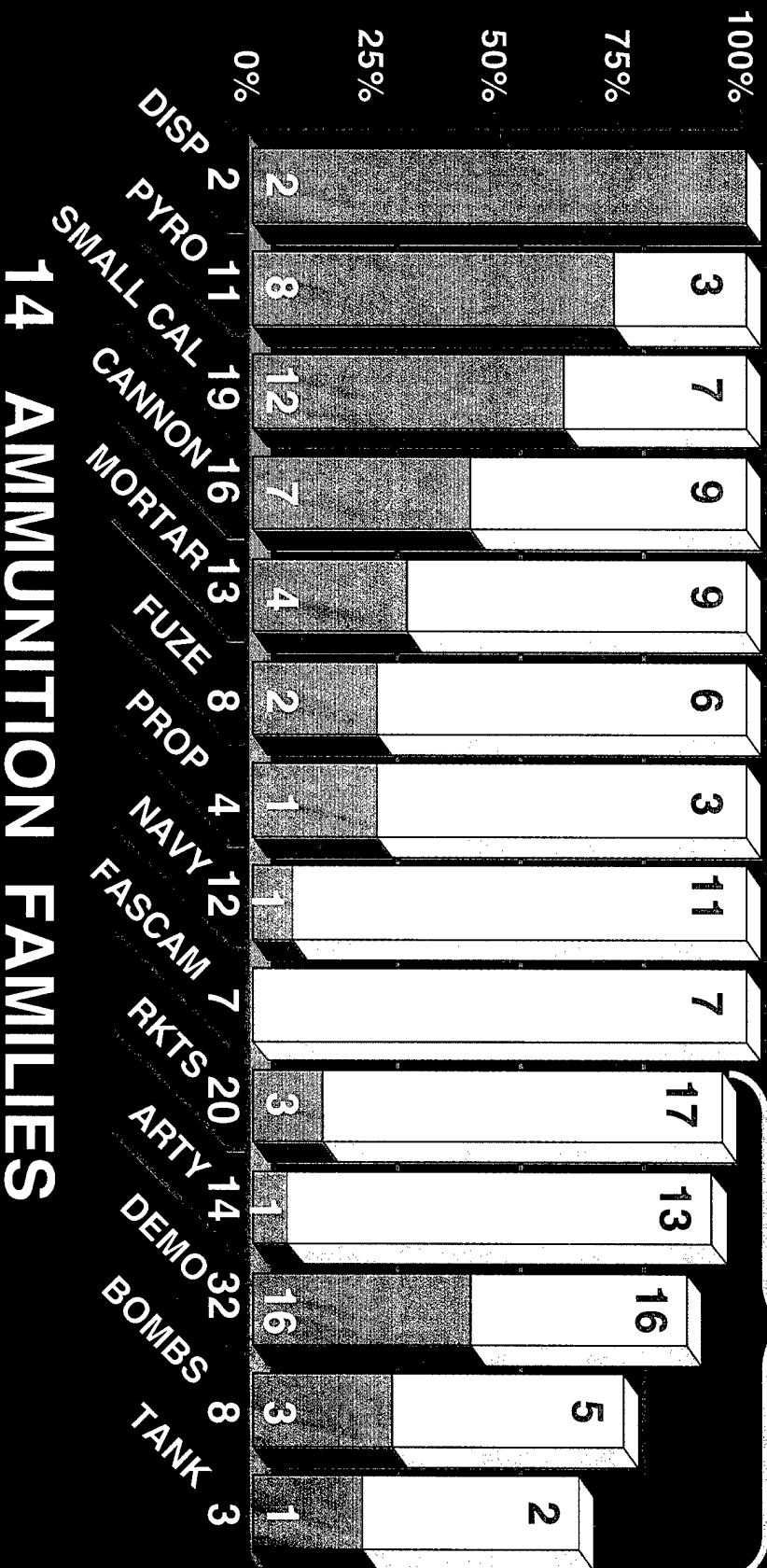
Percent Replenished Within 3 Years

NO BUYS

POM Buys

(Average for Entire Family)

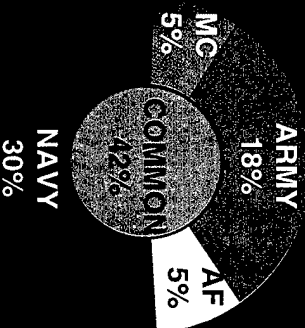
Cannot Meet DPG



14 AMMUNITION FAMILIES

# AMMUNITION ITEMS

## SMCA Replenishment



169 ITEMS → 9 with a  
SHORTFALL  
[ ALL SMCA REPLENISHMENT PLANNED ITEMS ]

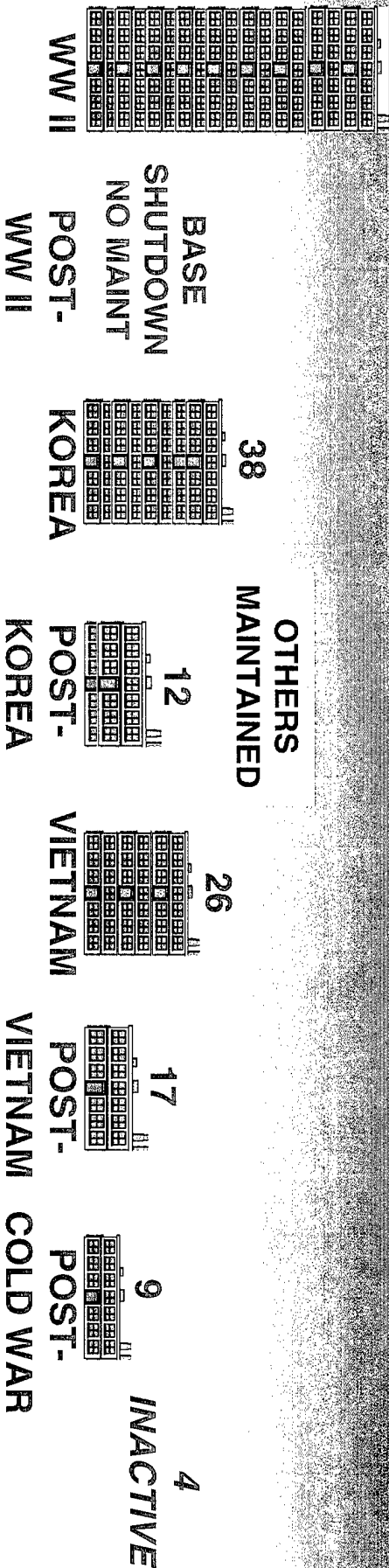
ARMY ITEMS 94 ITEMS → 6 with a  
SHORTFALL  
[ 30 Army Unique + 64 Common to other services ]

WAR RESERVE (POM) → 29 with a  
SHORTFALL

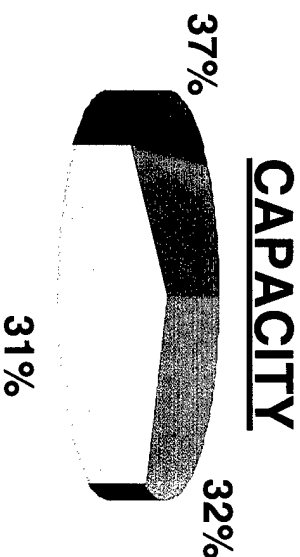
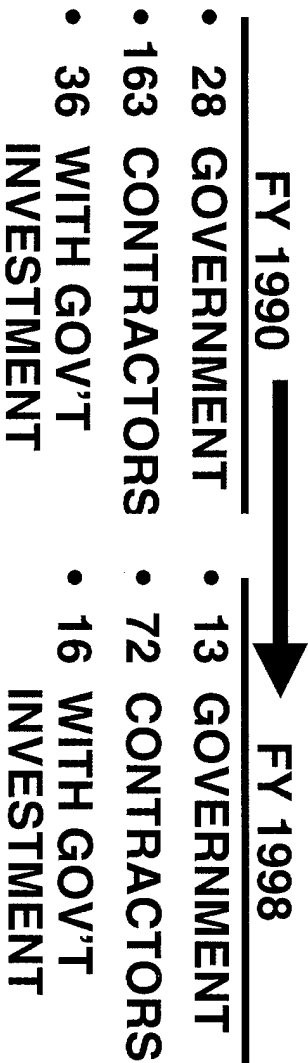
OPLAN (Go to war today) → 46 with a  
SHORTFALL

# MUNITIONS BASE SIZING

## BASE EVOLUTION



## APPROX 68% CAPACITY REDUCTION



BASELINE AUG 91

# FUTURE OF THE GOVERNMENT-OWNED AMMO BASE?

16 PEPs: Reduce thru Excess - to - Ownership

MSAAP: Explore Relocating Grenade Line

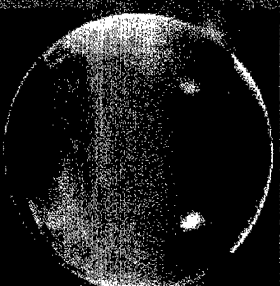
SCAAP: Pursue Excess - to - Ownership

RBAAP: Pursue Competitive Excess - to - Ownership

LAP: Pursue Reducing

One Facility

Continue Reducing Footprint



# HOW LONG WILL WE NEED THE CONVENTIONAL BASE?

UNTIL TECHNOLOGY LEAPS AHEAD TO ...

TRI-NITRO COOLAN

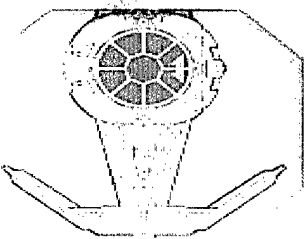
NEUTRINO

ENERGY BEAM

BULLET

AND TRANSITION TO A NEW CONCEPT...

TO SOLID



# AMMUNITION ORGANIC PRODUCTION BASE

## ACTIVE

LAP > IOWA, MILAN  
& LONE STAR

PROPELLANT > RADFORD

EXPLOSIVE > HOLSTON

SMOKE > PINE BLUFF

SMALL ARMS > LAKE CITY

BOMB > MCALESTER

NAVY GUN > CRANE  
& PYRO

## INACTIVE

ARTILLERY > LOUISIANA  
SHELL

GRENADES > MISSISSIPPI

CTG CASES > RIVERBANK  
GRENADES

## ARMY

### RESERVE PLANT

ARTILLERY > SCRANTON  
SHELL

# ACTIONS

**XMAT approach for Holston AAP**

**Disposal contract for Longhorn AAP**

**Test with COE: Cornhusker AAP**

**Teaming with GSA, COE, AMC, DA: Indiana AAP**

**Linking replenishment and peacetime in acquisition**

**Combining / grouping items**

**Multiple-year contracts**

**Facility contracting**

**Delta contracting**

**Excess to ownership**



# POTENTIAL PITFALLS

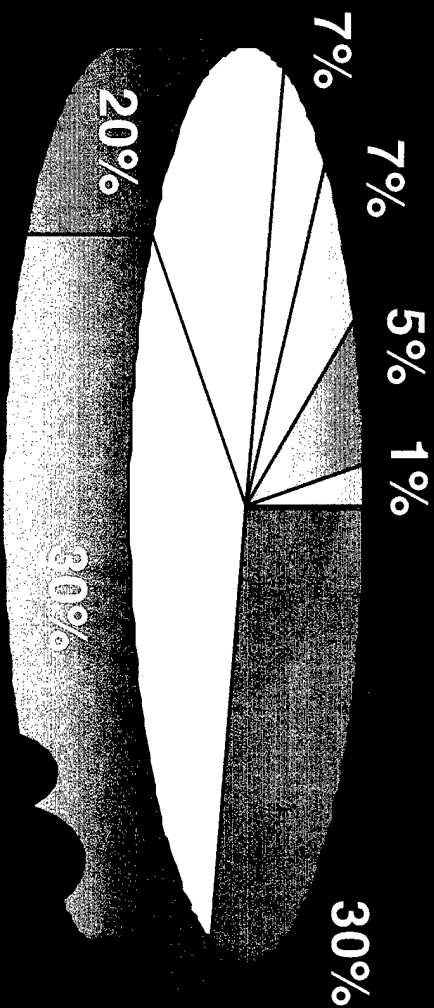
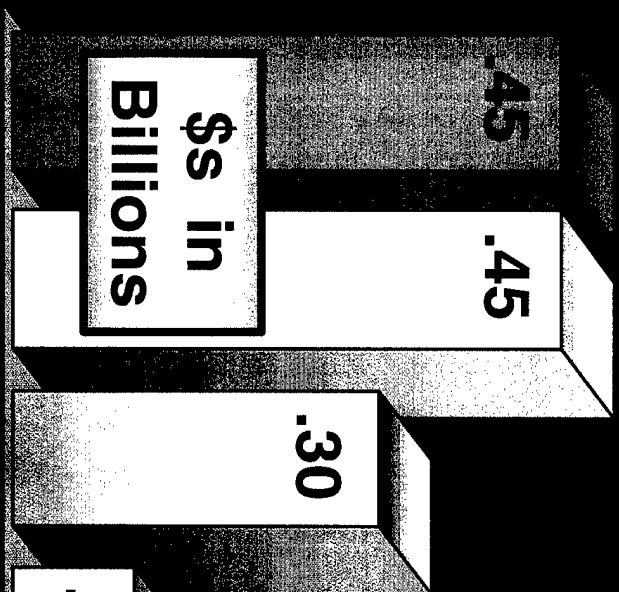
**Sub Optimization of Existing Base**

**Base Sized for Only Peacetime**

**Site Manager - No Production Skills**

**Repetitive Investment Costs & Learning Curve**

# HOW WE SHOULD OPERATE AMMUNITION BUDGET



\* STOCK / STORE  
RECEIPT / ISSUE

## MOST LIKELY SCENARIO

"It's tough to make predictions, especially about the future."

Less money for base with increasing F&O competition.

Questioned to death.

More studies.

Bill payer material.

Companies hanging on until all profit is gone.

Encourage private / contractor investment...

...saves 20% so we can compete.

More mergers.

International buys.

"It's deja vu all over again!"



# Acquisition Strategies



Milton I. McKinney  
HQ, IOCC  
15 September 1998

# IOC Acquisition Household

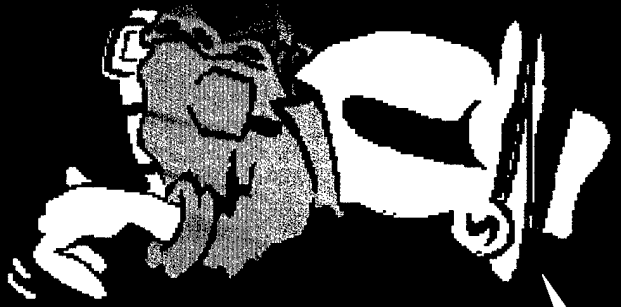
Industry  
asked for

And another thing -- I want

- Long term commitments
- Input to solving problem
- Combined products
- Flexible requirements
- Sharing the good & bad
- Partnership
- Fair play

Yes dear

In the past  
Government  
listened, but  
did nothing



YEAR 2000

PRESENT

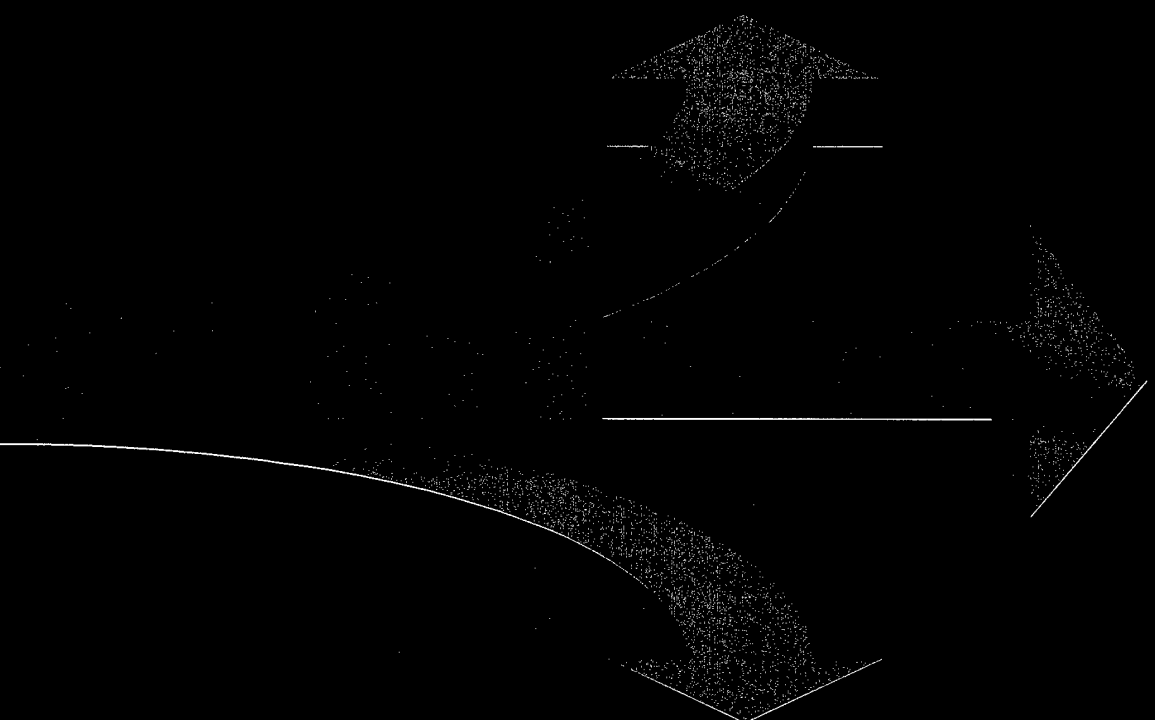
Managing

Acquisition

During

Period of

Great Change



FUTURE

Managing

Ammunition

into Next

Decade

# Acquisition Strategies

- Tank Ammunition
- Explosives
- Small Caliber Ammunition
- Load, Assembly, Pack
- Medium Caliber
- 20mm
- 40mm
- Demil
- GOCO

# 120mm Tank Ammunition

## Multi-year I Program Structure

- Program management (Training Rounds)
  - IOC cross functional co-located team
- Contract structures
  - 4 year multi-year with restricted sources
    - System Contractors: PRiMEX Technologies and Alliant Techsystems
    - Sub-tier Production Base: IAAAP (Mason & Hanger), RAAAP (Alliant Techsystems), Armtec Defense Products
- Results
  - 21% savings (\$136 million)



# 120mm Tank Ammunition

## MYII Acquisition Strategy

- Best value source selection criteria
- Key factor → risk mitigation
- Source selection objectives
  - Timely delivery
  - Quality product
  - Affordable price
  - Partnering mindset

# 120mm Tank Ammunition MXXII Acquisition Strategy (Cont'd)

- 5 year multi-year restricted competition
  - Incumbent system contractors
  - No sub-tier restrictions
- J&A approved under “Exception 1” on  
19 Feb 98

# Explosives

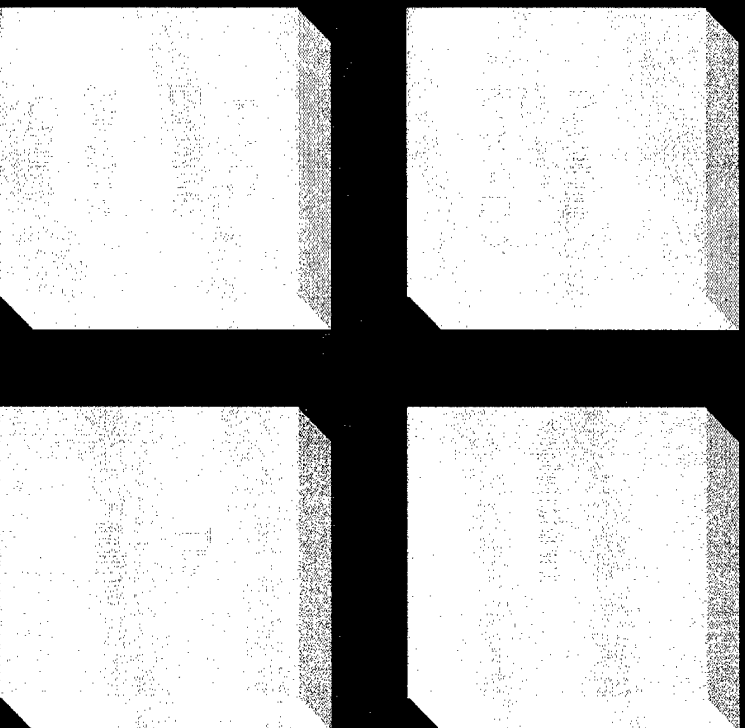
## Compete the Problem

- HMX/RDX at the best cost and quality and on time
- Provide R&D for products of the 20th and 21st century
- Have replenishment capacity
- Develop/execute a future strategy for the Holston facility

Involve industry in  
developing the solution

# Explosives

## The Solution



- Manufacture of RDX/HMX at Bridgewater, UK until Holston is reconfigured
- R&D = pilot through production (ARDEC, Indianhead, DERA, and Thiokol)
- Use Holston with efficiencies for replenishment
- Facility use, to be marketed
- Savings - \$184 million

Royal Ordnance of North America is the successful offeror

# Small Caliber Ammunition Acquisition Strategy

- Presolicitation Conference 9 Jul 98
- Industry to provide solutions
  - Manufacturer small caliber ammunition at the best cost and quality, on time including NATO approved U.S. design
  - Provide for R&D
  - Capacity for replenishment
  - Facility use at Lake City AAP and NATO Test Facility that makes sense

# Small Caliber Ammunition

## Acquisition Strategy

- Full and Open competition
- Best value (price, past performance, and technical
- Long term
- Firm fixed price
- Range prices
- Two separate contracts: Ammunition items and facility use

# Load, Assemble, & Pack Ammunition

## “Best Value”

### *Army Commits*

- Indemnification
- 5 yr facilities-use contract (same as Iowa AAP)
- Maintain or compete workload items. Intend to workload for at least 2 years
- Follow through on planned investments
- Total customer partnering

Savings 25.5% (\$153 million)

### *American Ordnance Commits*

- Guaranteed 20% LAP price reduction on IOC projected workload items; reduction % ramps up from 1999, 2000, & 2001 to 20% by 2002 & in 2003
- Fixed viability
- Sensible investment (up to \$10M)
- Radical & continuous improvement
- Facilities use management
- Total customer partnering

# 25mm-30mm Ammo Acquisition Strategy

FY 99-03

- Restrict to the United States and Canada
- Retain two sources via split awards
- Consolidate 25mm/30mm Cartridges when prudent
- Award multi or multiple year contract(s) in FY 99 for FY 99 - FY 03
- Exclude M919 25mm APFSDS-T Cartridge due to non-transition



# 20mm Ammo Acquisition Strategy

FY 99-03

- Restrict to the United States and Canada
- Compete annually
- Award single “winner take all” contract annually
- Reexamine strategy if 20mm ammo requirements increase in later years

# 40mm Acquisition Strategy

## M918 Projectile Assembly

- Competitive 8(a) procurement
- Largest 8(a) concern set-aside in IOC
- Firm fixed price contract
- 100% unevaluated option
- Potential future multi-year systems buy
- LAP at American Ordnance

# Ammo Demil Acquisition

- Enhanced small business participation
- 5 year ID/IQ long term contract
- Munitions - greater diversity
- Two awards to maintain out year competition
- Government/industry shared risk
- Less reliance on firm fixed price contracts
- Contractors will have on-line access to TDPs
- Teaming with organic operators

# Proposed Active GOCCO Strategies

Holston	Awarded
Lake City	Award 2000 – 5 yr. award + 5 priced 1 yr. options
Hawthorne	Award 2000 – 1 yr. award + 6 priced 1 yr. options
Lone Star	Compete within 5 yrs.
Milan & Iowa	Non compete award thru 2003
Radford	Compete 2003

# IOC Acquisition Household

## Finished projects

- IPT
- Partnering
- Army Credit Card Program
- Restructuring Organizations & Processes
- Information Technology and Electronic Commerce
- Use Common Processes
- Performance Based Contracts
- Removing Barriers to Business Judgment
- Market Research
- Innovative Contracting
- System Contracting



# IOC APBI

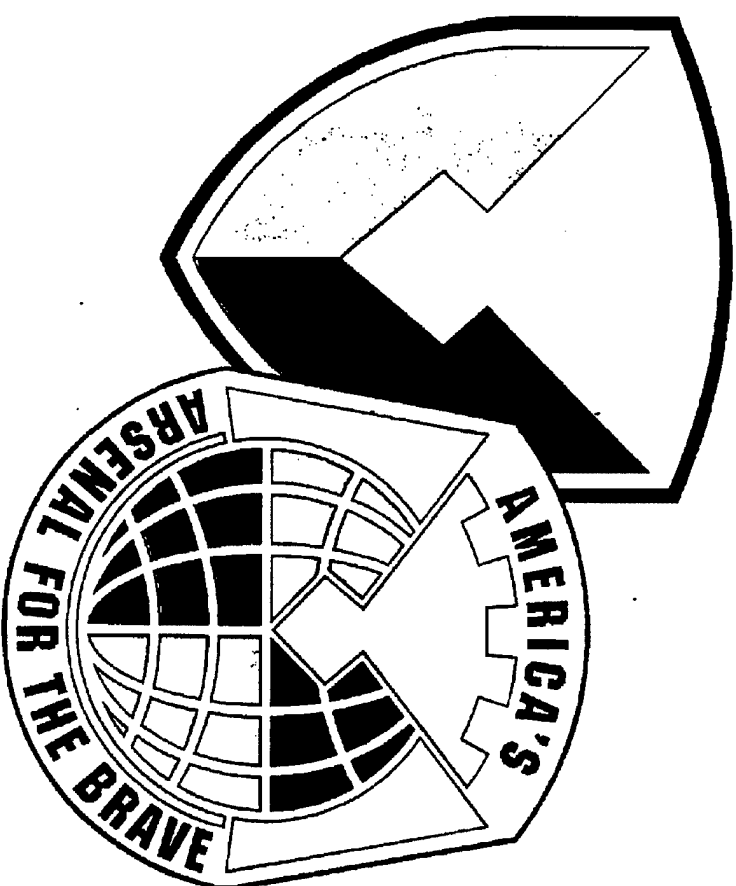
2 - 3 March 1999

Holiday Inn, Moline, IL

Presented by:  
*Brigadier General John Deyernond*  
DCS Ammunition

# Army Material Command

*Ammunition Update*  
to  
**MUNITIONS SUMMIT**  
15 September 1998



*AMC - Relevant, Responsive & Ready!*





# Current Ammo Issues

Reduce Ammo Costs

Demil Optimizer

Mortar Backlog

AAA Study on Reforming Ammo Procurement 97 Completion

Less Than Lethal

Army Science Board Look at Demil

ProdBa Assmnt

Ammo Prod Footprint Reduction

Precision Munitions/ Logistics

QDR

Decker Memo PMS as Life Cycle Managers

DODIG Recommends Consolidation of Ammo Plant Contract Mgt under DLACAS

Munitions Review

Ammo 'Rock Drill'

Fuze Base

Land Mines

HQ AMC Reshape

Green Ammo

Ammunition is a busy business !!!



# PAA - Funding Profile

## PAA Historical Trend (\$M)

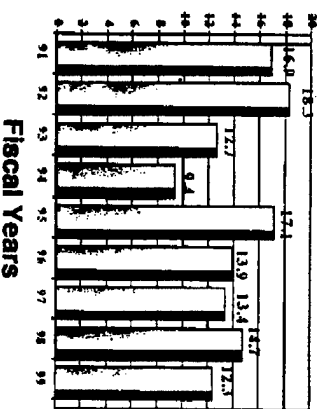
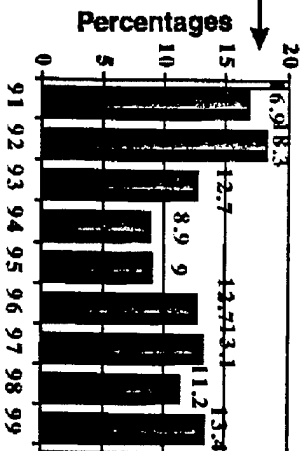


Today's Production  
Reflects Yesterday's  
Funding -

## Procurement as a Percentage of Army Budget - FY98/FY99

Army Budget (\$ in Millions)	FY98	FY99
APPROPRIATION	1,292	1,256
FAMILY HOUSING	25,754	26,211
MIL PERSONNEL	4,511	4,487
RDTE	597	707
MCA	20,656	20,468
OMA	6,752	8,373
ERA	377	386
BRAC	400	524
TOTAL*	60,442	62,512

\*Totals may not add due to rounding.



## Ammunition as a Percentage of The Procurement Budget - FY98/FY99

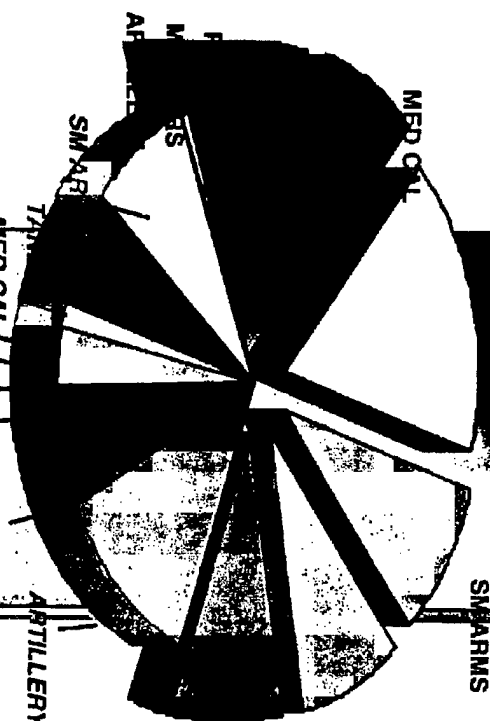
Procurement Appropriation (\$ in Millions)	FY98	FY99
APPROPRIATION	1323	1326
AIRCRAFT	744	1206
MISSILES	1291	1434
WTCV	1020	1009
AMMUNITION	2563	3111
OTHER PROCUREMENT	6940	8111
TOTAL	12540	13887



# Army Ammo Funded Requirements

## PAA

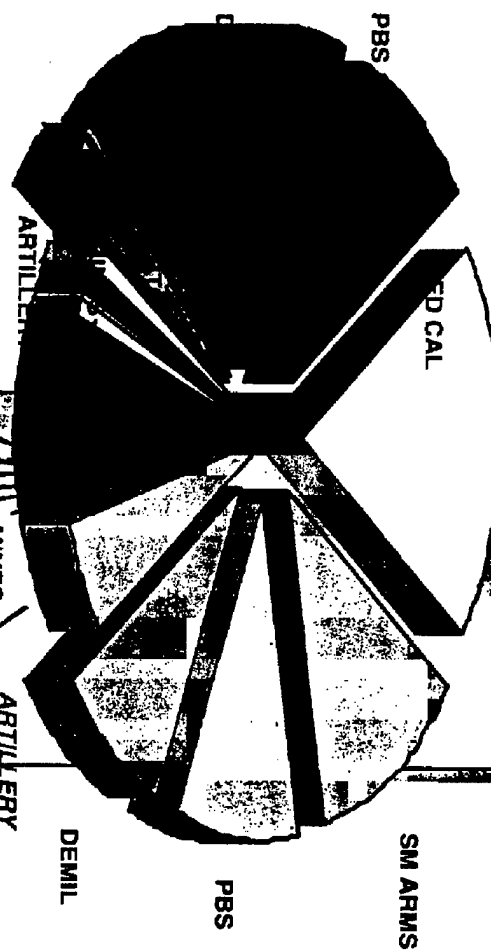
**FY98**



**PM/PEO/ARDEC**

IOC \$632M  
PM/ PEO/ARDEC \$395M

**FY99**



**PM/PEO/ARDEC**

IOC \$800M  
PM/ PEO/ARDEC \$194M

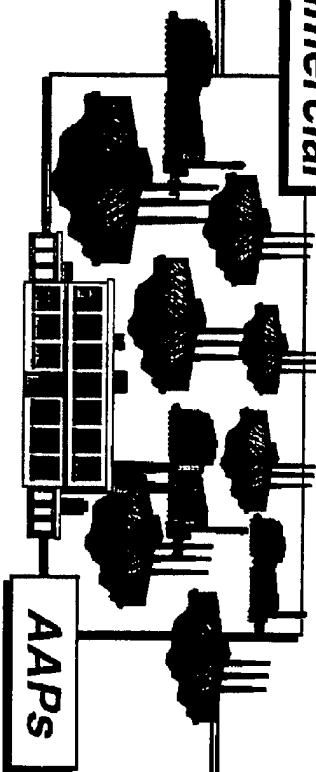
- ☒ ARTILLERY
- ☒ MORTARS
- ☒ MINES
- ☒ FUZE
- ☒ ROCKETS
- ☒ OTHER
- ☒ MED CAL
- ☒ TANK
- ☒ SM ARMS
- ☒ PBS
- ☒ DEMIL



# Ammunition Production Base

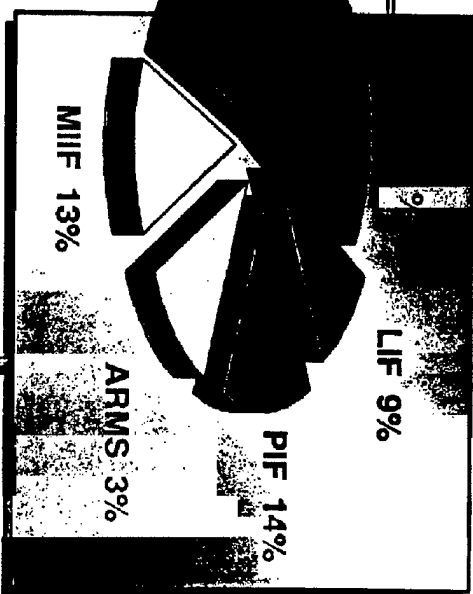
## FY98-99 Budget

### Commercial

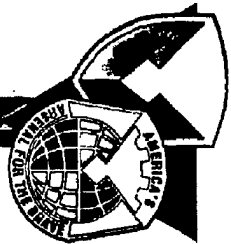


### Activity 2 PAA Funding

	\$ Million	FY98
Industrial Facilities (IF)	24.3	24.7
Waywayof Industrial Facilities (LIF)	16.4	15.3
Maintenance of Inactive Facilities (MIIF)	22.5	15.8
Conventional Ammo Demil	91.0	98.0
Arms Initiative	24.4	4.9
<b>Totals (\$ in Mil)</b>	<b>181.6</b>	<b>181.7</b>

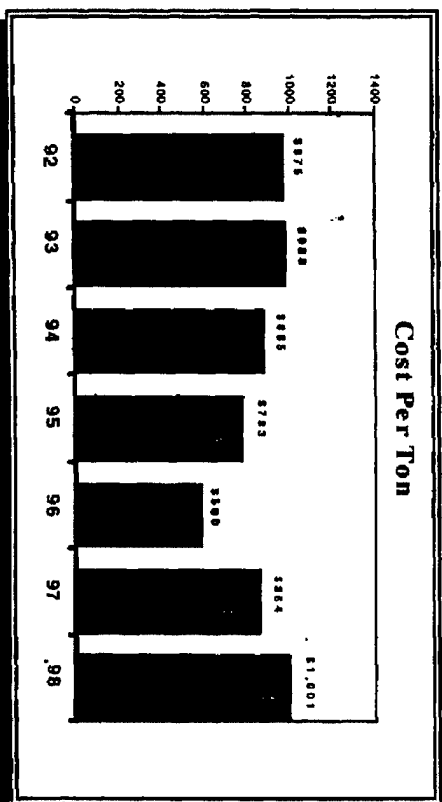
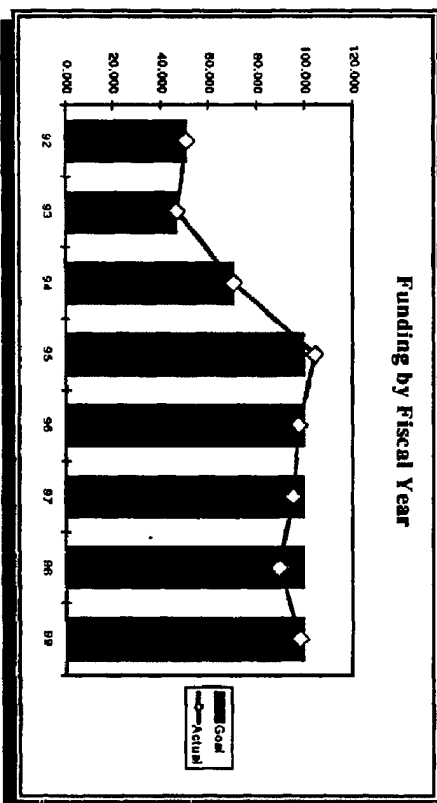
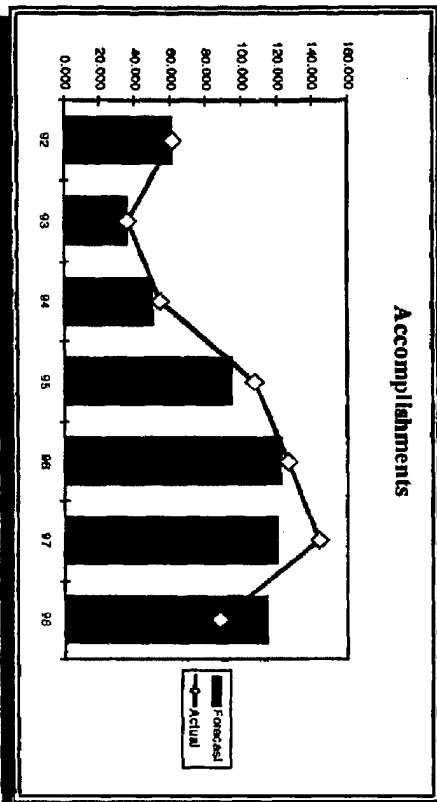


**Challenge**  
Production Base  
vs.  
Hardware



# Ammunition Demilitarization

## Accomplished/Forecast



Note 1: Cost spike during FY97 was due to greater than normal use of incineration @ approximately \$2,000 per ton.  
Note 2: Includes reimbursable projects.

(data as of 8/17/98)

### Goals--

- Continue to avoid demilitarization through direct sales, FMS, cross-leveling between services and use in training whenever possible
- Execute a balanced program between destructive and non-destructive technologies
- Maintain a balance between government installations and the growing private industry capability
- Continue with our successes



# CAWCF Closure

## Direction/Plan

**\* DOD Comptroller Directs CAWCF Close-out Beginning FY 99 [PBD 432, Nov 1996]**

- Separate Financial System for Ammunition Considered an Unnecessary Expense
- Directed APIT Be Formed by OSD(A&T) To Determine Follow-on Procedures and Oversee CAWCF Closure

**\* Army Develops Closure Plan**

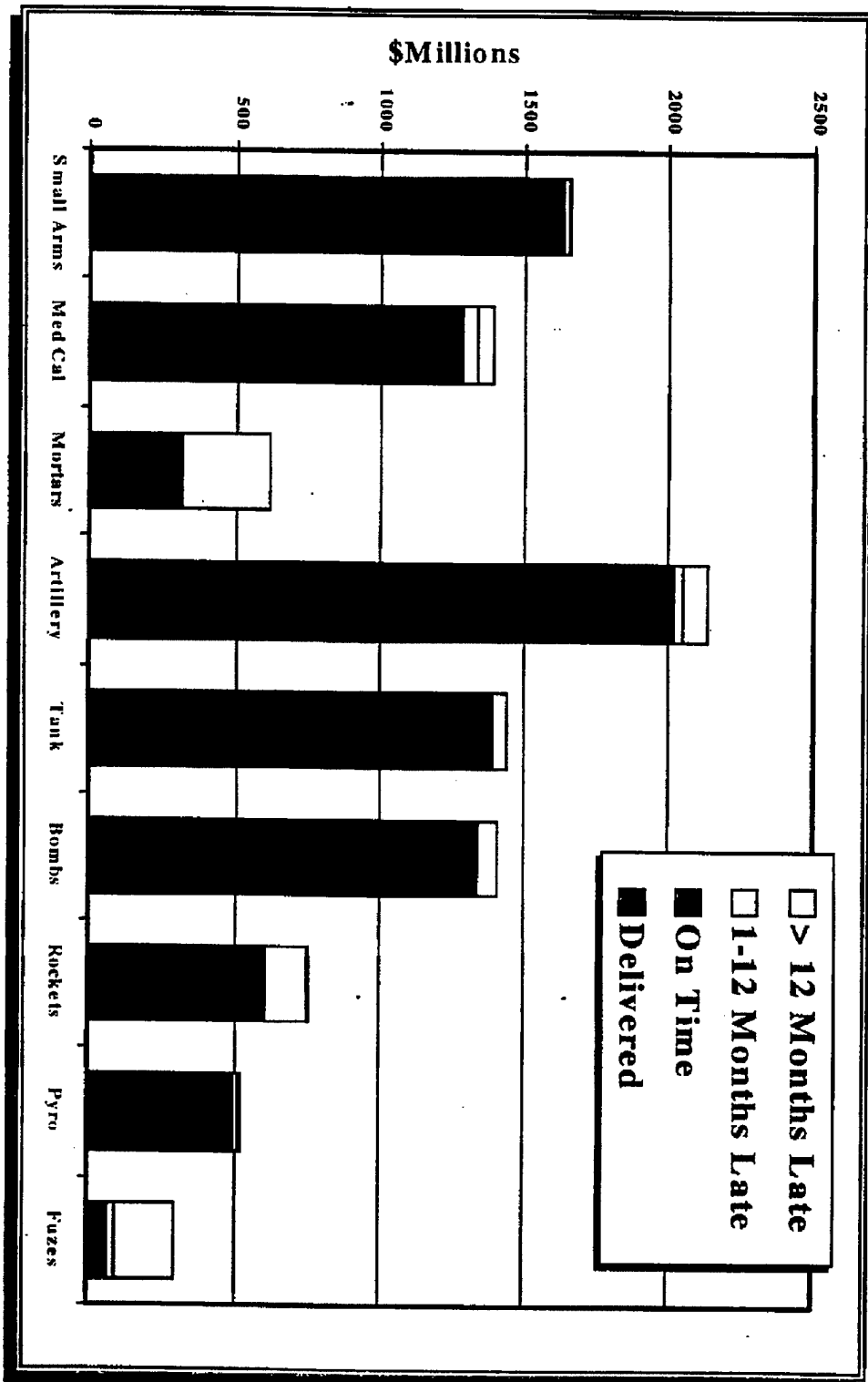
- All Orders Delivered and Fund Closed by FY05
- Army Audit Agency to Validate Closure Cost
- Plan Approved by All Services & OSD in May 97

- ✓ **Fund Obligation Closely Scrutinized**
- ✓ **Accurate Pricing**
- ✓ **Reduce Lead Times**
- ✓ **Fixed Price Contracts with Options**
- ✓ **Increased Systems/Bundle Buys**



# *Work in Progress FY90-97* CAWCF Orders

*as of 30 SEP 97*



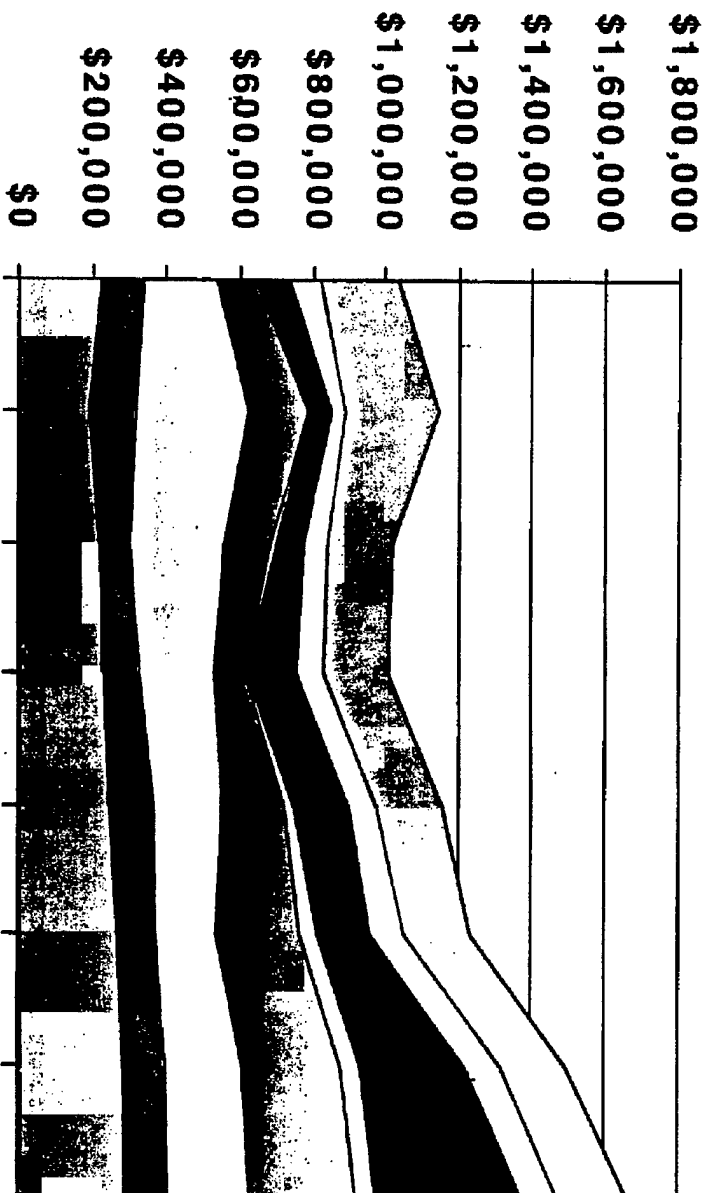




# Ammunition Procurement Projection by Categories

**FY98-03**

**\$Thousands**



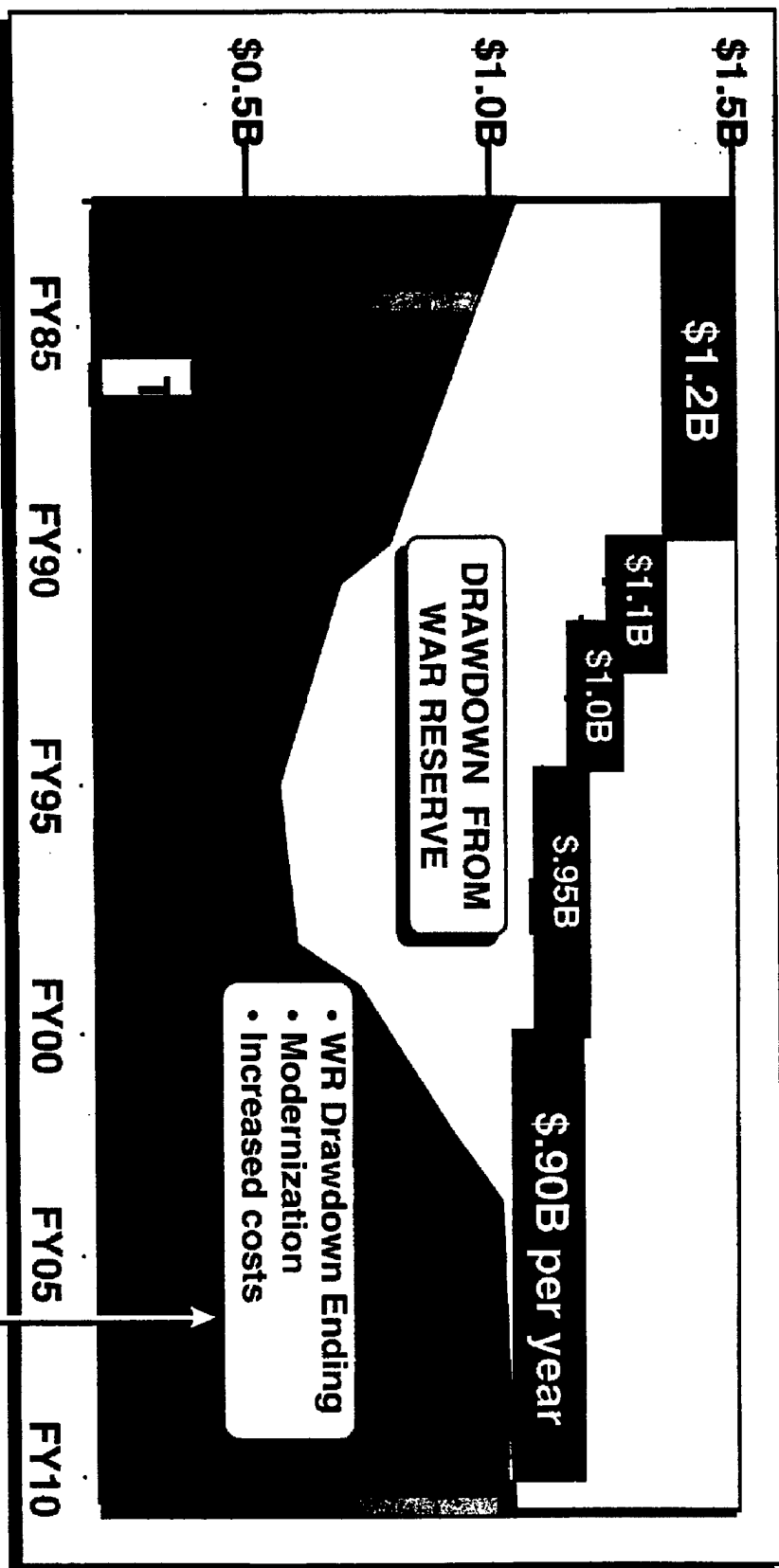
FY96 FY97 FY98 FY99 FY00 FY01 FY02 FY03

- ☐ Prod Base
- ☐ Other Misc
- ☒ Rockets
- ☒ Mines
- ☐ Arty Fuzes
- ☒ Arty Ammo
- ☐ Tank
- ☒ Mortars
- ☒ Small Arms



# Training Ammunition

## Resource Trend



$$\begin{matrix} \text{Training Ammunition} \\ \text{Procurement} \end{matrix} + \begin{matrix} \text{WR} \\ \text{Drawdown} \end{matrix} = \begin{matrix} \text{Training} \\ \text{Resourcing} \end{matrix}$$

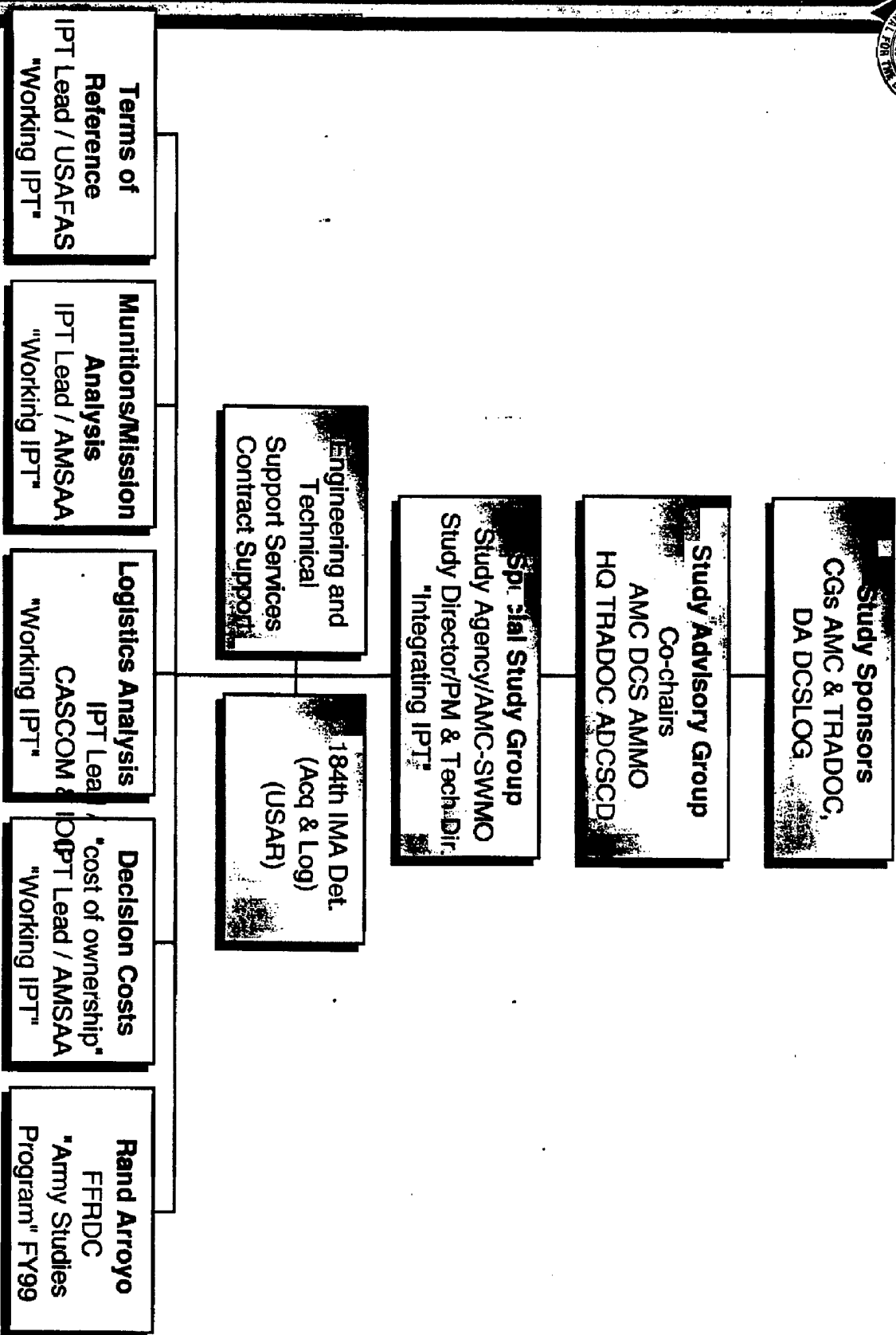


## ***Precision Munitions/Logistics Study Broad Study Questions***

- \* Given the warfighting strategies of Force XXI and Army After Next, what are all logistics impacts that result in the use of precision munitions [heavy mix] versus the use of non-precision munitions [only]?
- \* Given these logistics impacts, what are the resulting possible implications on Army force modernization strategy and Army force composition? What are those costs?
- \* What are the true burdens (deltas in logistics) of precision munitions versus non-precision munitions across all combat, combat support, CSS force structure, and O&S? What are those costs?
- \* For the decided upon scenario, time frame, and weapon mixes, determine the level of investment and cost comparisons to acquire and sustain a realistic a mix of precision munitions and non-precision munitions?



# PMILS Organization





# PMLS Conventional and Precision Munition Candidates (12)

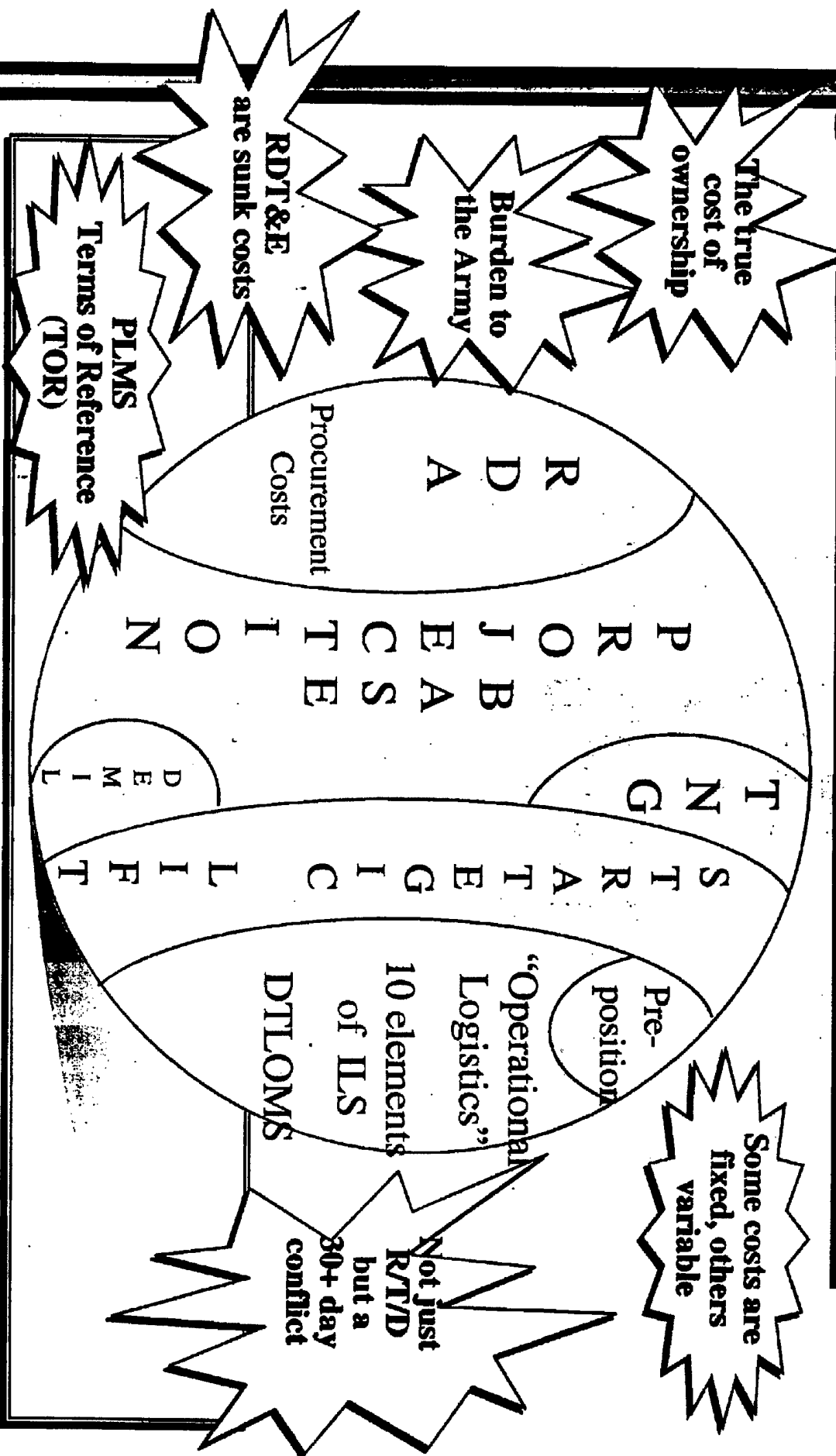
Target Description	Current / Conventional Munition	Next Generation Precision Munition	PMLS Comments/Benefits
Bunkers, soft targets	Bunker Defeat Munition	PGMM, 120mm	PGMM, 120mm extends urban combat capability, extends range and precision
Anti-armor	Family of 120mm tank main gun ammo	Tank extender, range extended by engaging TIRM targets in defilade	
All targets	155mm, DPICM base bleed, M864	ER XM982 DPICM improved range for counter battery	
Bunkers	155mm, HE widearea fuse	ER XM983 HE delayed / Bunker engagement	
Counter Battery	155mm, DPICM	XM898 P1 SAM efficient counter battery killer	
All targets	155mm, DPICM	155mm, Low Cost Capable accurate registration Munition (LCCM) Filtrable target engagement on M864 / M864 reduces munition requirements	
All targets but heavy armor	MLRS DPICM, XM85	MLRS DPICM Extended range and significantly with GPS guidance Improves accuracy	
Anti-armor	No current in-direct rocket launched capability	MLRS MSMTAR kills ACV targets deeper	Diminishes intensity of close fight Improves force survivability
All targets but heavy armor	ATACMS APAM	ATACMS IA ORS accuracy independent of range	
Anti-armor and High Value targets	No current in-direct missile launched deep capability	ATACMS II / BAKM High Value targets deep,	improves force survivability
Soft point targets and bunkers	Hydra 70, and sometimes Hellfire II (LSA)	Advanced Precision Killable Rocket requirements System (APKWS) (Reduces collateral damage	
Heavy armor targets and	Hellfire II (LSA)	Apache Longbow Extended platform survivability	Provides all weather capability

the current defense systems

M:\Sharon\lunsum88



# Weapon System & Ammunition Logistics Footprint



Elements of the Ammo Log Footprint Equation



# *Most Likely Area of Impact*

CSS Tonnage

All munitions  
(Class V)  
comprise 70 %  
of CSS tonnage.

Artillery  
ammunition is  
80% of that.

The opportunity exists for Artillery Precision  
Munitions

to impact 56% of 666 tonnage.



## ***Precision Munitions and Logistics Study (PMLS) Synopsis***

- **Quantify deltas in cost of ownership/burden to the Army between current conventional non-precision munitions and future precision munitions, across the total logistics footprint and in battlefield performance**
- **Draw from previous and ongoing effectiveness, warfighting, and logistic analyses (WARREQ, IOC Rock Drills, Crusader Ammunition Supply Study, etc.)**
- **Identify and quantify value of Revolution in Military Logistics (RML) between conventional and precision munitions**
- **Develop data, findings, conclusions, and recommendations for decision makers for the POM 02-07 process in FY 99**





# Summary

## Imperatives:

- ✱ **Reduce Cost of Ammunition**
  - ✓ Production
  - ✓ Storage / Maintenance
  - ✓ Demilitarization
- ✱ **Maintain Readiness**
  - ✓ Replenishment Capacity
  - ✓ Ability to Produce Future Requirements

**PMLS  
Study!**



**Ken Morgan**

**President**

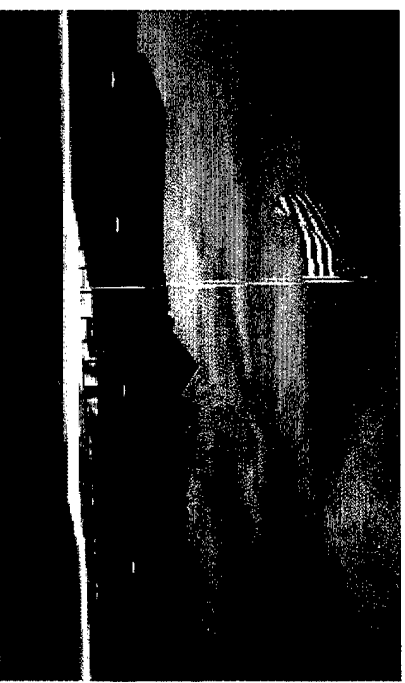
**General Dynamics Ordnance Systems**

**16 September 1998**

# Overview

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- **Definitions**
- **Differing Views of Privatization**
- **Comments on Study Recommendations**
- **An Alternate Approach**
- **Depot Privatization**



# Definitions

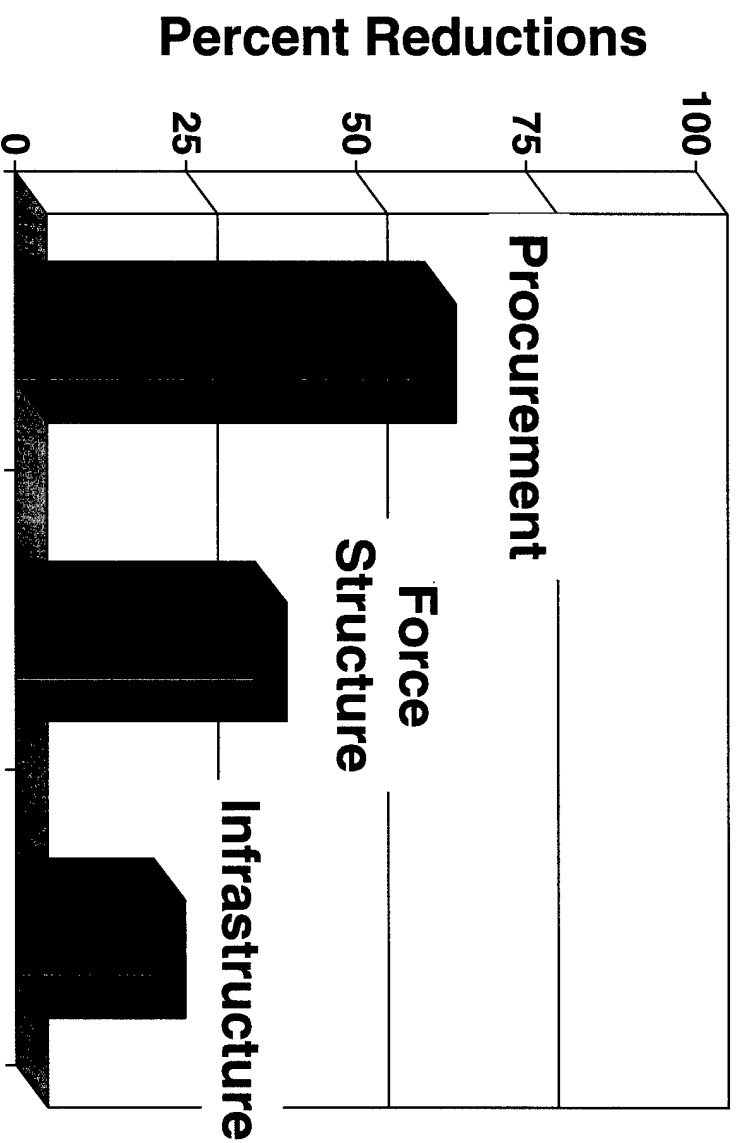
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- **PRIVATIZATION**
  - The transfer of assets from government ownership to private ownership
- **OUTSOURCING**
  - Contracting out for services and support formerly accomplished with internal government resources

**Terms Often Used Interchangeably**

## Why all the Interest?

- FY97 - 01 DoD Infrastructure Costs: \$740 Billion
- Budget Reductions since 1989:



**Infrastructure Not in Sync with Today's Realities**

# Privatization Theories

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- **“Field Of Dreams” Theory:**
  - If you build it, they will come
- **Government Privatization Corollaries:**
  - If we own it, it must have commercial value
  - If we offer it, they will come
- **Industry Executive Reverse Corollary:**
  - If you don’t want it, neither should we

**Much talk about business-case analysis, but  
little real appreciation of market forces**

## **Study Recommendations re Privatization**

- **Government owns selected real estate as ammo industrial parks -- “magnets” for ammo producers**
  - **Operated by private site manager**
    - » Invests to attract tenants
    - » Uses site assets to generate revenue
- **Industry finances, owns, & operates production assets; invests to modernize**



## **Industry Perspective**

---

- **Must provide increasing shareholder value**
- **Driven by Return on Investment (NPV/IRR)**
- **Key factors:**
  - **Stability/predictability**
  - **Ability to control variables**
  - **Ability to leverage assets for maximum return**
  - **Ability to be lean and agile**
  - **Ability to create and sustain a competitive advantage**
- **Think: strategic, integrated, expandable**
  - **Not: limited-use, single program, disassociated**



## **American Ordnance Model**

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- **Full-service Commercialization at Iowa & Milan AAPs**
- **Government retains ownership**
- **American Ordnance:**
  - **Operates both plants under FUC**
  - **Has flexibility to consolidate/transfer operations and integrate systems**
  - **Maximizes use of Best Commercial Practices**
  - **Commits to 5-year fixed catalog pricing**
  - **Commits to invest**
  - **Enhances competitiveness for international/third-party sales**
  - **Preserves key production base resources**



## **Depot Privatization**

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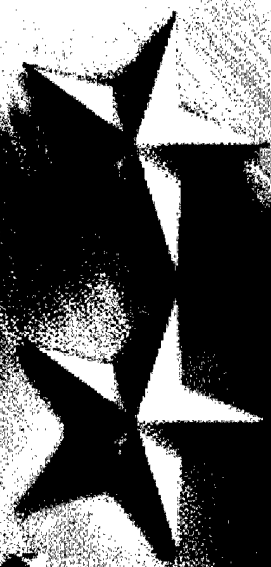
- **Complicated by numerous laws & regulations**
- **Typical scenario: BRAC, Outsourcing, Real Estate Transfer**
- **Examples of Privatization In Place -- NOSL & NAWC**
  - **Pass-through leases + work contracts**
  - **“Hot Turnovers”**
  - **NAWC seen as most successful**
    - » **Viewed differently by contractor**
- **Alternative: Public/Private Partnering**

# Summary

---

- High infrastructure costs mandate spin-off of more government functions and assets
- Privatization comes in many forms
  - Market factors not often understood
  - Not a panacea
- Commercialization and Partnering offer alternatives
  - Achieve most objectives of privatization
  - Faster, Cheaper, Better
  - a win-win framework





# TACCOM

1998

Munitions Executive

Summit

## US Army Tank-automotive and Armaments Command

Presented by

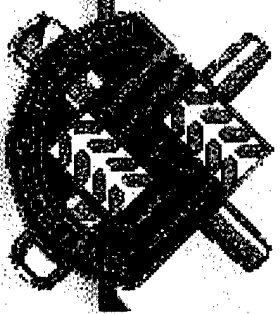
MG Roy E. Beauchamp

CG, US Army Tank-automotive and Armaments Command





## Corporate Vision

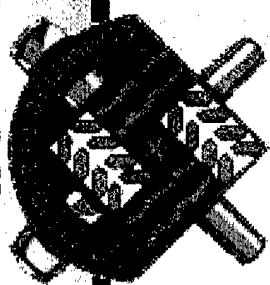


- To make the technology and sustainment systems work for soldiers through the seamless integration of S&T, R&D, Acquisition, Log Sustainment and Soldier Readiness.
- To create a business environment at TACOM where every associate understands the requirement to control costs and manage from the customer perspective and understands their inherent responsibility to do so.





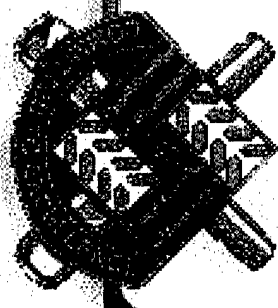
## BUSINESS VISION



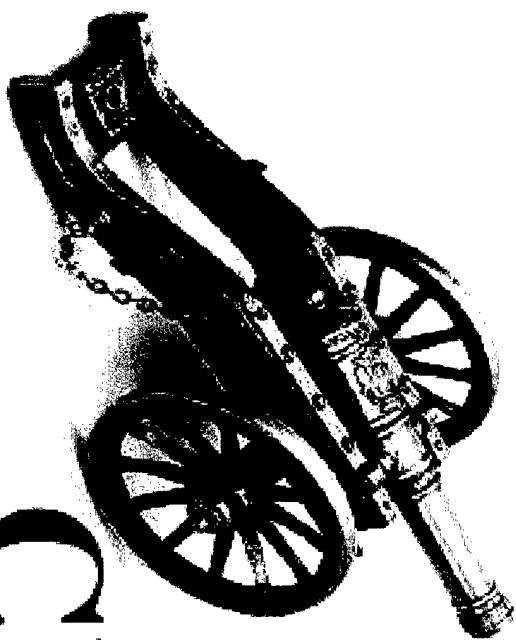
- A fully integrated business environment connected by a fully integrated data environment using commercial business processes to integrate business operations within each organization, across major Commands, across Services, across DoD and across Industry.
- A corporate management structure for which the organizing principle is multi-functional work teams to institutionalize the concept of integrated process teams; a highly decentralized structure which uses the integrated data environment to link desk top "servers" to facilitate the transformation of data into actionable information to enable more efficient, fully integrated business operations at reduced cost.



# ★★ Purpose of Presentation



- TACOM's Corporate Response to change
- TACOM's Core Competencies-Munitions Focus

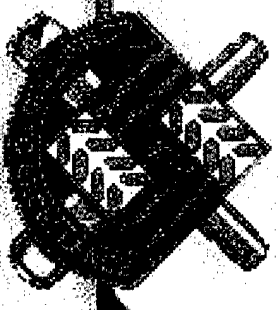


# Change





## Briefing Outline



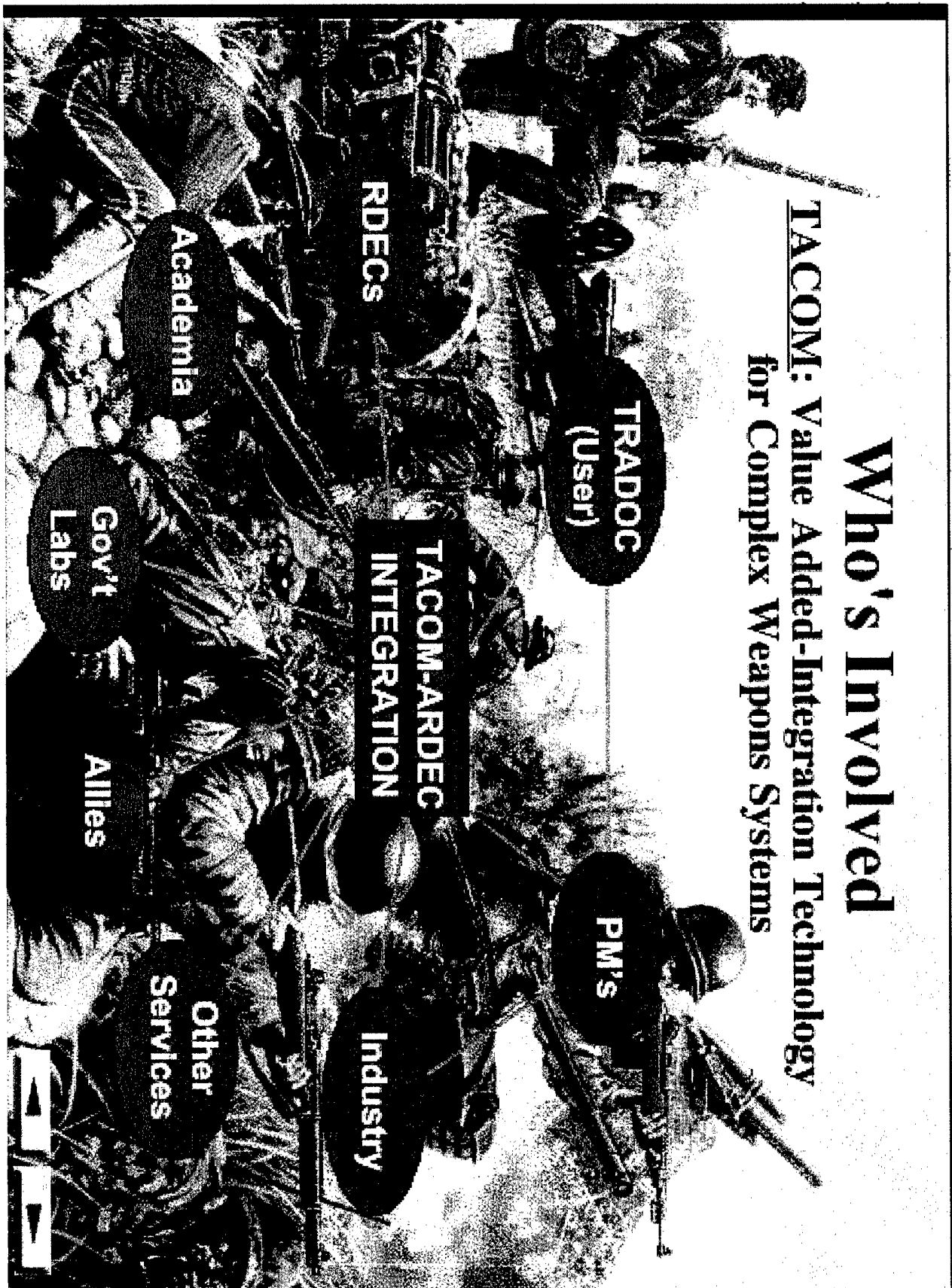
- **Background**
  - A Changing Military Perspective
  - Impact on Ammunition Systems
- **Integration is a TACOM Core Competence**
  - TACOM Mission
  - ARDEC/TARDEC focus
  - Organization for the future
- **TACOM Meets the challenge of doing business in the Future**
  - TACOM of the Future
  - Integrated Ammunition Systems





# Who's Involved

TACOM: Value Added-Integration Technology  
for Complex Weapons Systems



# TACOM MISSION

-To Generate Warfighting Capability for the Army

-To Sustain the Warfighting Readiness of the Army

-To manage the Army's Investment in S&T, R&D and Sustainment for the Army

3,341 Weapon Systems  
34, 138 NSNs  
300 Systems in Acq Pipeline

-Serve as the Life Cycle Manager and Integrator for Ground Combat Equipment

## Tank-automotive & Armaments COMmand

Research, Develop, Field and Support

Mobility and Armament Systems Total Life Cycle

*To Support Army Readiness*

Combat Vehicles  
Tactical Vehicles  
Trailers  
Construction Equipment  
Material Handling Equipment  
Tactical Bridges

Fuel & Water Distribution Eqpt  
Sets, Kits & Outfits  
Shop Equipment  
Chemical Defense Equipment  
Howitzers  
Large Caliber Guns

Mortars  
Rifles  
Machine Guns  
Ammo  
Aircraft Armaments  
Demolitions & Explosives

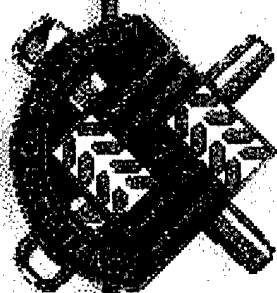
Rail  
Watercraft  
Patrol & Lubb Eqpt

FORCE





# Ammo Mission



Mounted Operations



Combat Service Support



Fire Support



Special Operations



Dismounted Operations



Aviation Armament

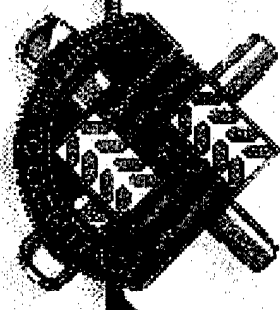


Counter - Mobility





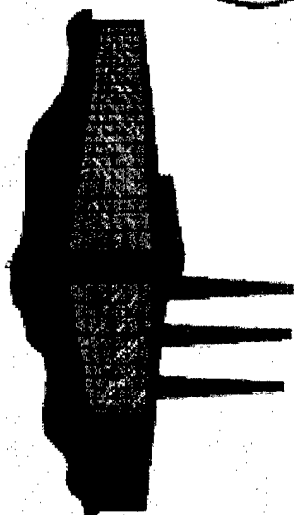
# Business Factors



Personnel  
Reductions

Acquisition Reform  
Life Cycle Mgt.

Ammunition  
Budgets



**Ammunition Business Base**

AAN Ammunition  
Requirements

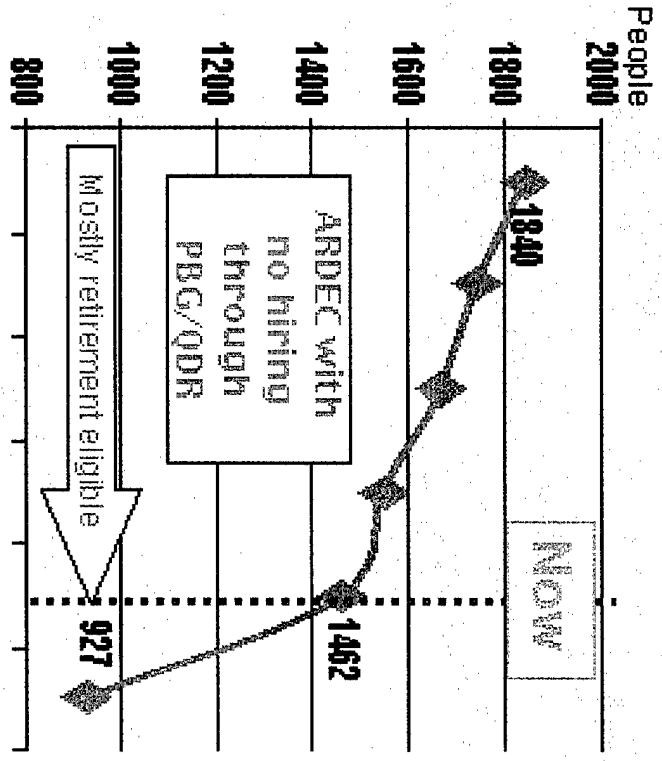
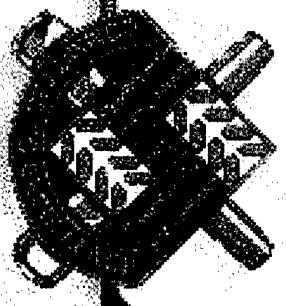
Ammo Base  
Reductions

Changing Military  
Perspective





# Armaments Skill Base History & Projected



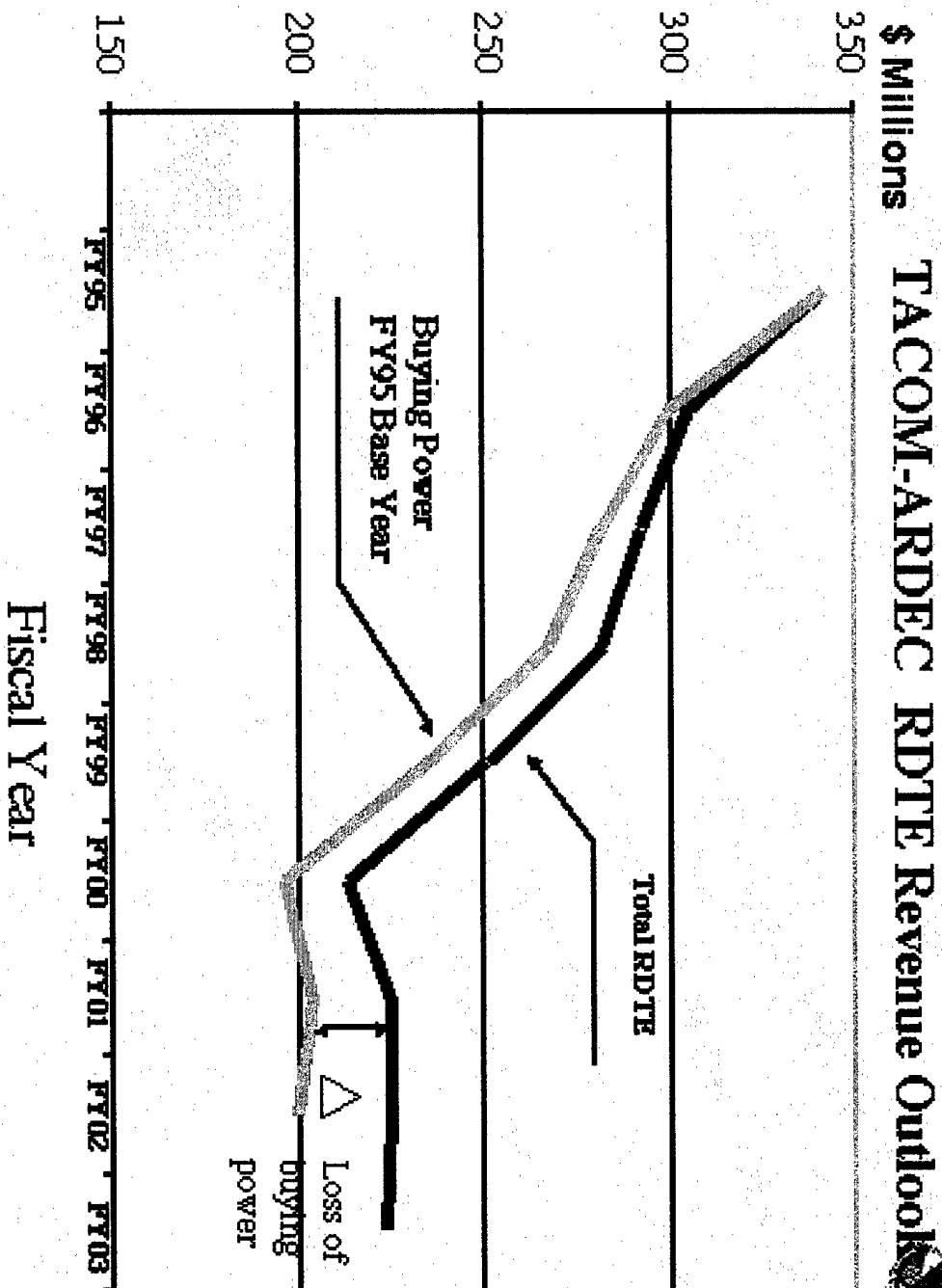
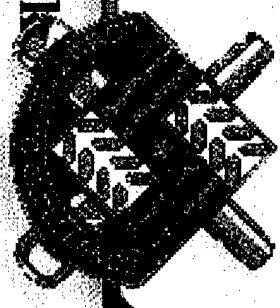
TACOM has done well so far  
but  
we are on the edge of a deep chasm

ENGINEERS & SCIENTISTS





# Decreasing Revenues





## Changing Perspective



- **Changed Military Threat**

- Regional Conflicts
- Proliferation of Chemical/Biological/Conventional Arms

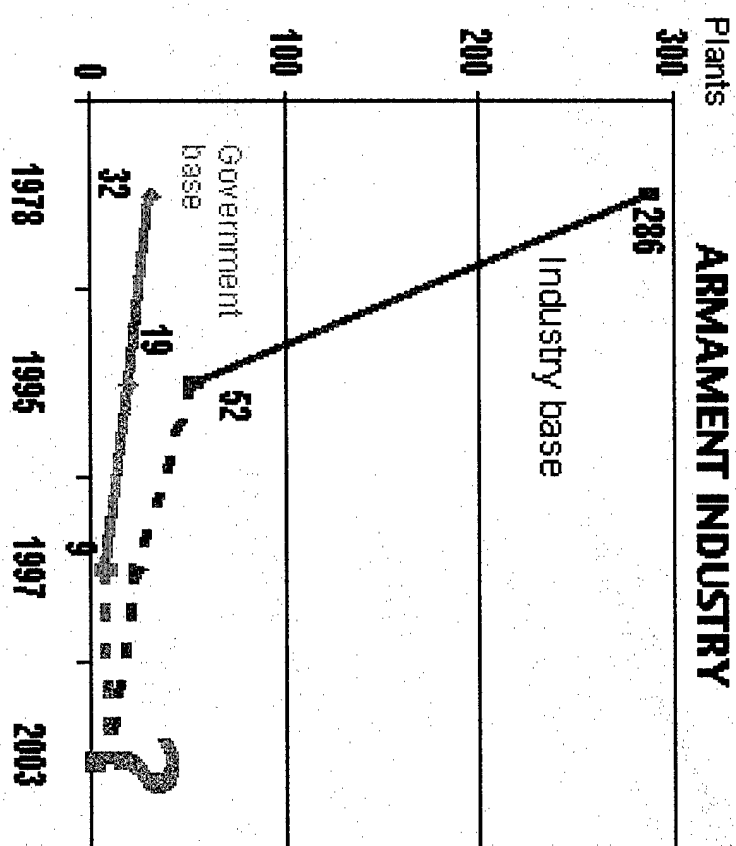
- **Changed Military Tactics/Strategy**

- US Forces Will Be CONUS-Based
- Light, Deployable, Lethal Forces
- Emphasis on Deep Strike, Early Entry Forces, Real-Time C4I

- **Smaller Army**

- More Lethal/Survivable

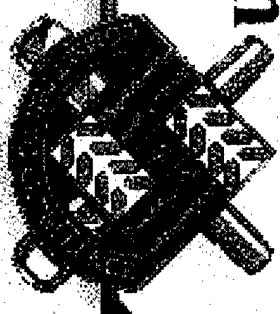
# **Ammo Base Organizations**







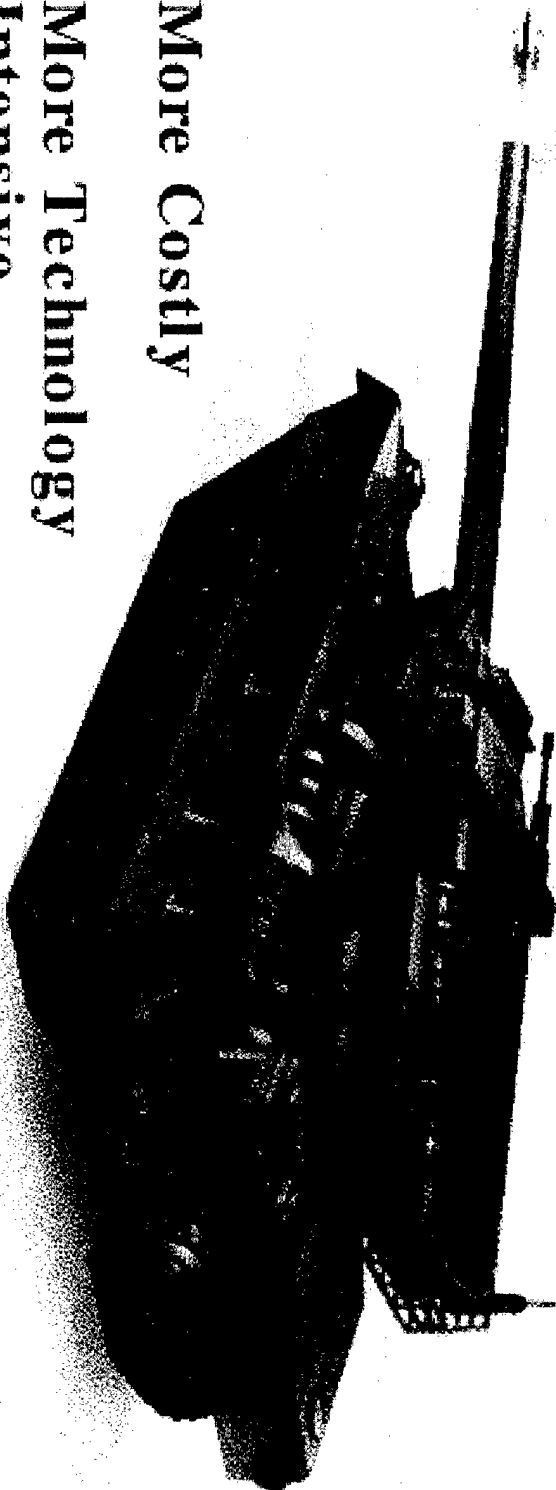
## Changes in Ammunition Requirements



- Highly Specialized
- More Sophisticated

Next to fuel, ammo is the largest tonnage on the battlefield...

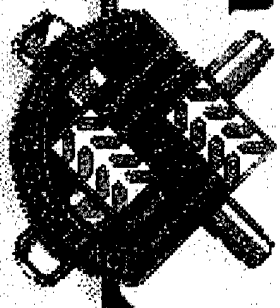
- More Costly
- More Technology Intensive



Lighter is better

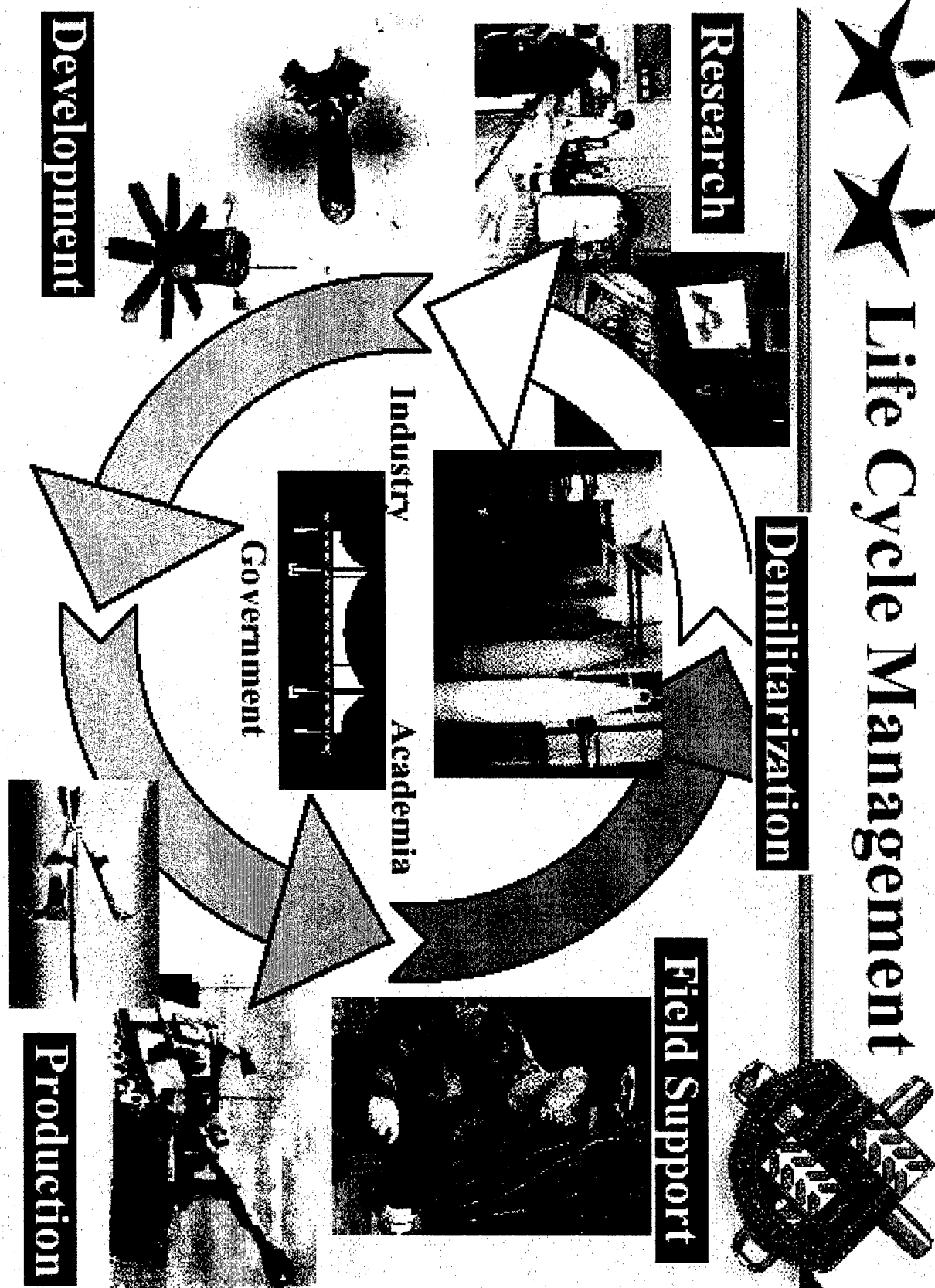


# **Ammunition Acquisition Reform**



- Army XXI Reinvention Laboratory
- Cost Reduction and Reinvestment Initiatives
- PEOs and Major Commands required to focus on Management of Total Life Cycle
- Modernization Through Spares Initiative
- Army Purchase/Credit Card usage
- Established a Paperless Contracting PM Office
- Single Process Initiative (SPI) implementation
- Past Performance Information Management System (PPIMS)
- DOD Standard Procurement System (SPS)

# ★★ Life Cycle Management



# TACOM Organizational Response to External Change

## • Reengineer TACOM: Principles

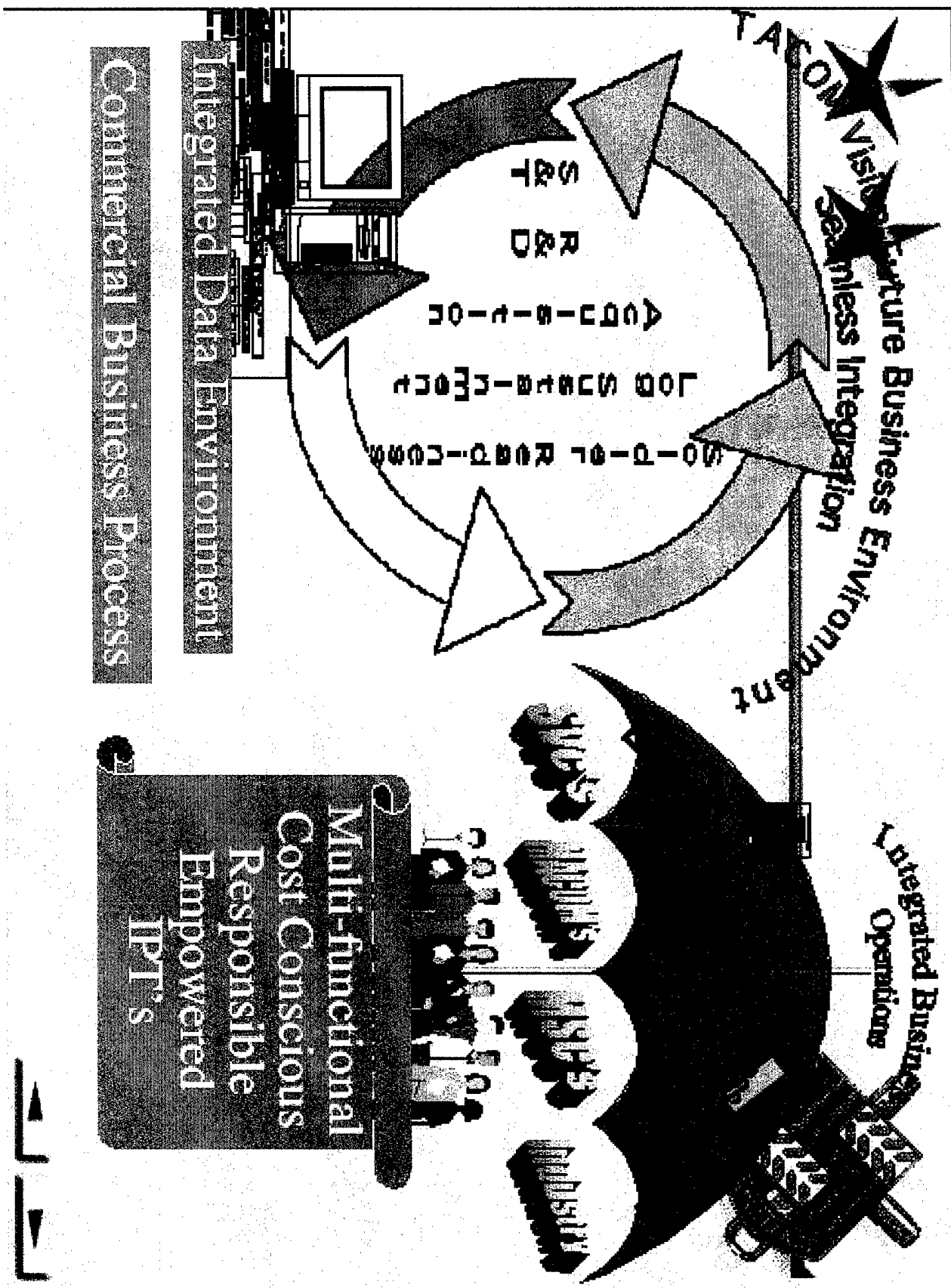
- Leader Based
- Customer Focused
- Business Centered



# Where We Need To Go

- Multi-Functional Work Force
- A Growing, Learning, Teaching Organization
- Fully Integrated Data Environment
- Fully Integrated Business Environment
- New Organizational Structure

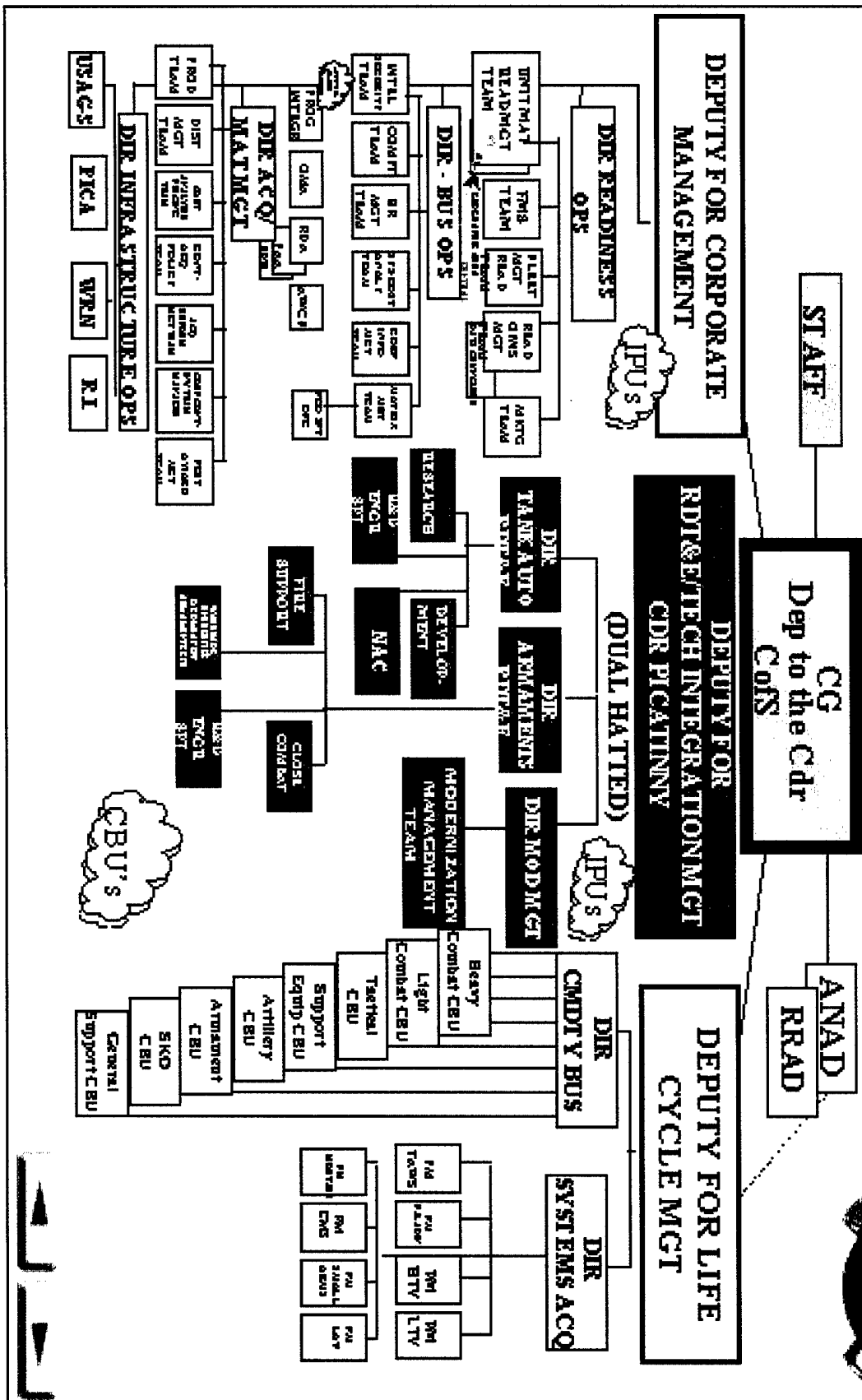
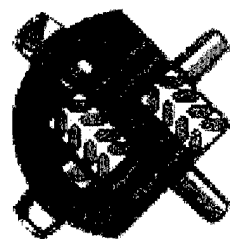




## COVmand



## TACOM of the Future (Concept)

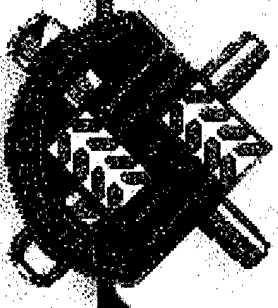






## Integrating ARDEC With TARDEC: Synergy

### Key Areas



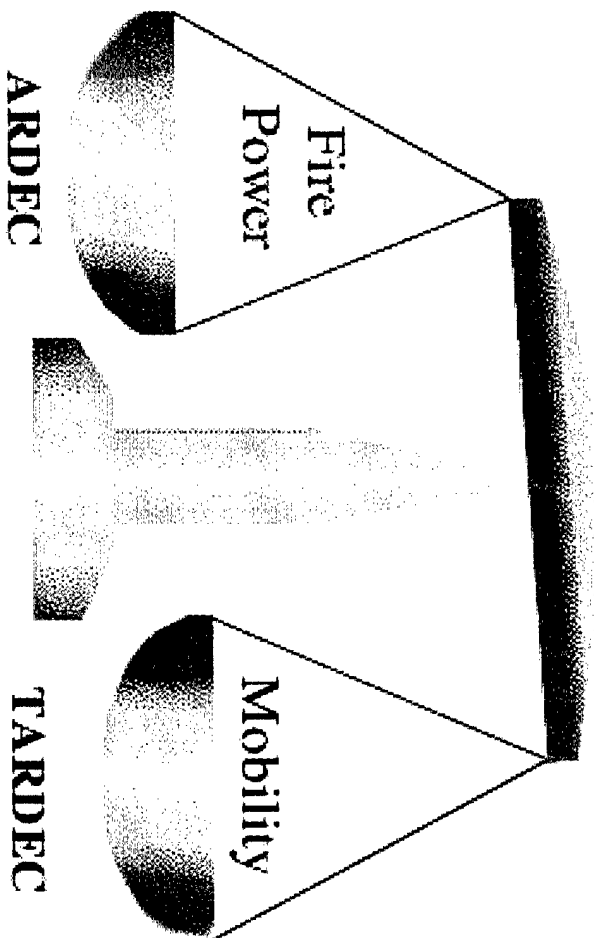
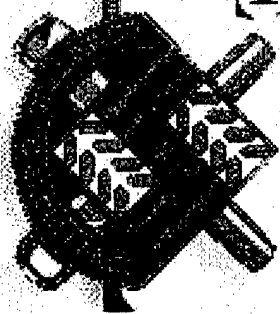
- Tech Base
- ASCO
- TC, Material Release, Environmental
- Life Cycle Software Engineering
- Tech Data
- Engineering Support, OSCR, Modernization through Spares, Depots, DCA
- Organic vs Matrix Engineering support
- Pollution/Corrosion Prevention
- Modeling and Simulation
- Strategic Planning
- Mantech
- Configuration Management
- Career Development
- CRDA, Dual Use Technology and Small Business Innovative Research
- CP2, Government Source , QSL

- No
  - Relocation of human resources
  - Homogenization of organizations
- Yes
  - Harmonization of business processes



# The Future TACOM RDTE Challenge

CSA rep AAN = "Knowledge and Speed"



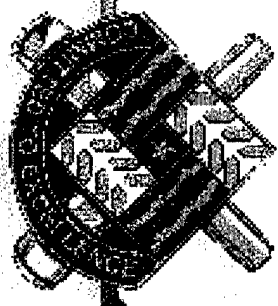
Find the Balance  
Balance = Integration

- Modeling and Simulation
- User Requirements range, speed, lethality, etc
- People Skills
- Electronic Data Management
- Fire Control + C3I





## Multiple Ammo Integration Levels

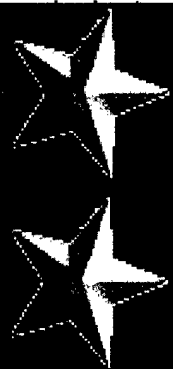


- Air Land/Airmy-Joint Services
- TACOM with Industry
- TACOM with Ammo Community & PMs
- Ammo with Weapon System



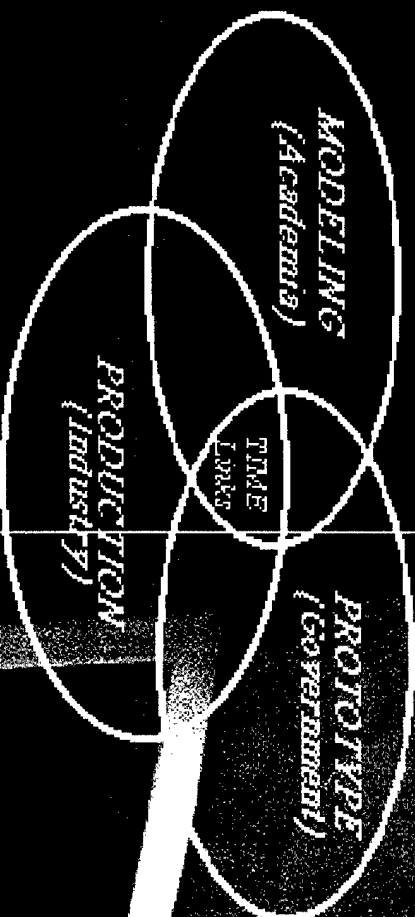
**Many Players and Multiple Dimensions**





# Integrating ~~FACTOR~~ with Industry

## Totally Integrated Munitions Enterprise (TIME)

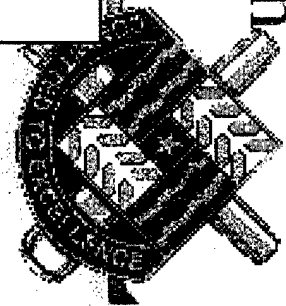


- Integrating the combined capabilities of Industry, Government, Revolutionize the industrial base to a virtual enterprise.
- Technically advanced manufacturing processes
  - Innovative product development processes
  - Modern management practices





# Integrating Organizations with Mission and Processes



**PEO-GCSS**  
☆☆☆

**IOC**  
☆☆☆

**TACOM**  
☆☆☆

**Ammunition  
Executive  
Council**

**Integration  
Office**

*Unresolvable  
Issues*

*Seam/Genetic  
Issues*

**Artillery**

**Mortar**

**Small  
Arms**

**Tank**

**Mines**

**Fuze**

**Business Case IPTs**

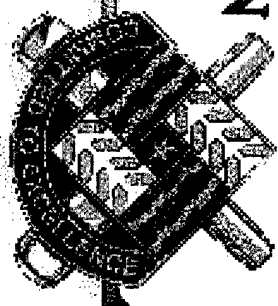
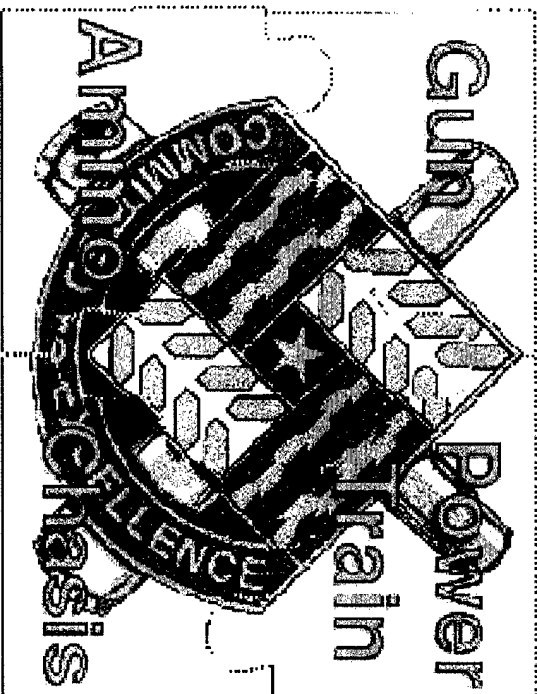
**Ammo  
Logistics**



## TERM SYSTEM INTEGRATION CONSIDERATIONS

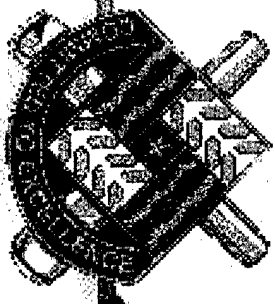
TERM integration into MIA2 SEP requires harmonizing the following capabilities:

- Global Positioning System (GPS) and Inertial Measurement Unit (IMU)
- Turret/Hull position sensor and Hull Cant sensor
- Fire Control Computer software development/validation
- FBCB2 communication methods and protocols
- Crew interface for firing non line of sight missions





## Closing



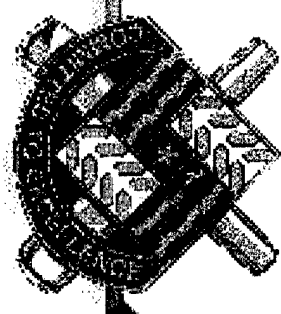
### Critical to the future Warfighter

- Integration of Ammo processes
  - TACOM
  - Industry and the private sector
  - DoD
- Major points:
  - Smaller technology based Army
  - Ammunition is most critical commodity
  - Investment in technology to enhance: lethality, survivability, and producibility is essential
  - Integration of complex guns, ammo, & fire control technology into weapon systems is our core competency





## Conclusions



- Current business environment is effecting the ammunition business
- Meeting the mobility and firepower requirements of future warfighters will necessitate the systems integration of gun, ammo and platform technology
- The TACOM of the future is posturing itself to meet both the technology and business challenges of the 21st Century





# PEO GCSs Overview



16 September 1998

Munitions Summit

Presented by

**MG John F. Michitsch**

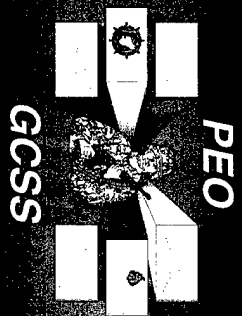
Program Executive Officer

Ground Combat and Support Systems



# Agenda

- Mission
- Organization
- PEO GCSS Focus
- Munition Programs
- Total Life Cycle Management Policy & Approach
- Our Role in Life Cycle Management
- Business Plans Considerations
- Advanced Warfighting Experiments
- Thoughts to Leave You With



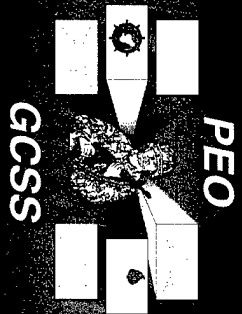
# PEO GCSS Mission

*Integrated, Intensive Management of Development, Production, Fielding, O&S, and Demil of Ground Combat and Support Systems.*

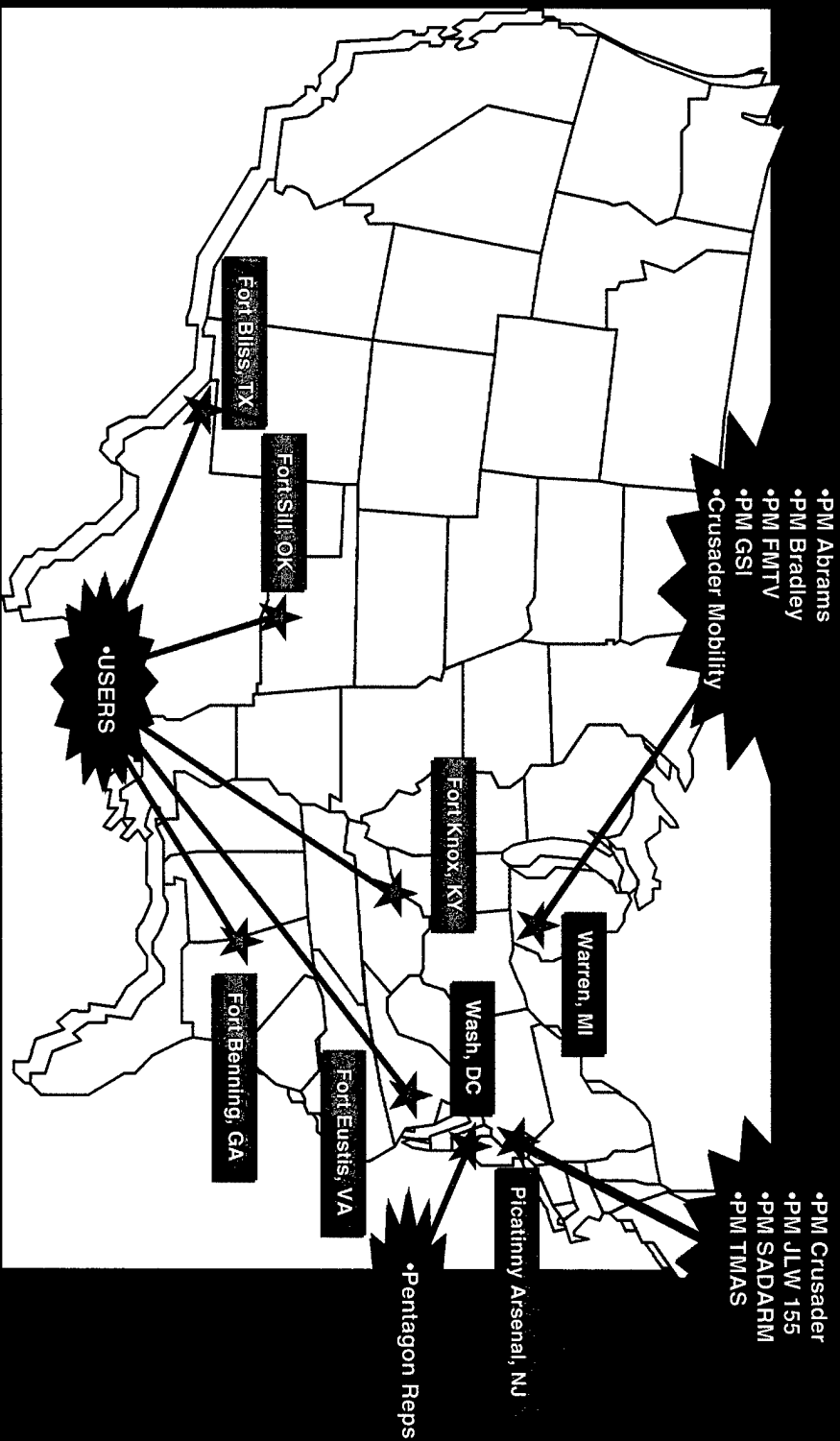
- Provide Programmatic Oversight and Direction.
- Ensure PMs are Adequately Resourced.
- Enforce Program Baseline.
- Life Cycle Management
- Represent PMs with DA, OSD, Congress.
- Add Value to PMs' Activities by:
  - Providing Broader Perspective.
  - Integrating Across PM Lines.
  - Serving as an Honest Broker.

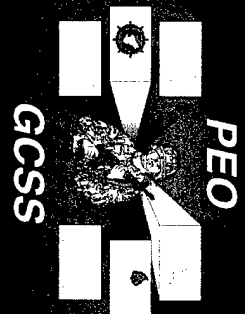




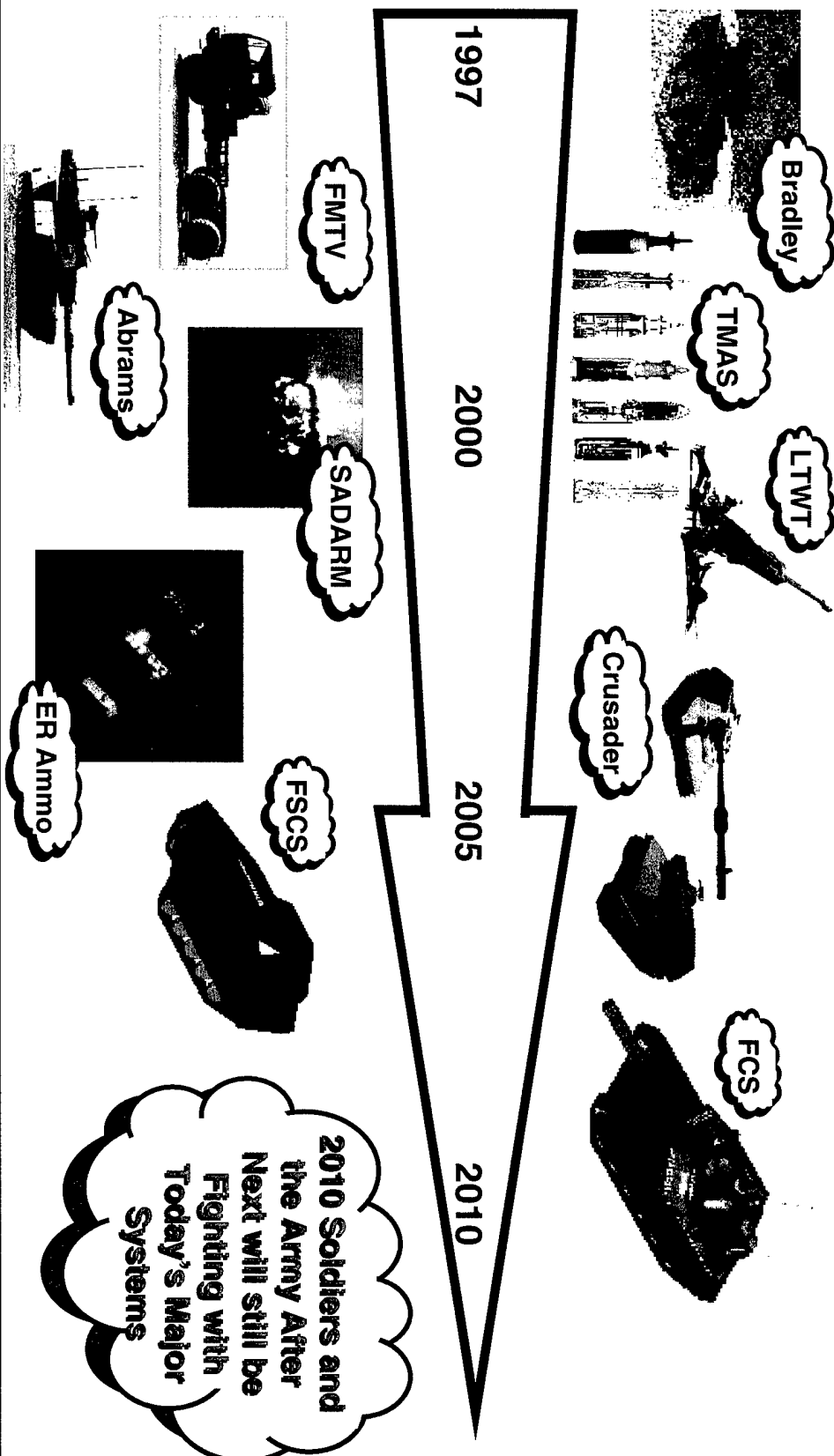


# Ground Combat & Support Systems Where We're Located

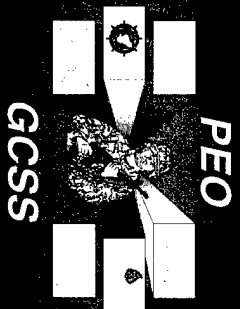




# PEO GCSS Focus







# Modular Artillery Charge System (MACS)

## CURRENT CHARGES

M2A1 (Green Bag)

M4A2 (White Bag)

M119A2 (Red Bag)

M203A1

**MACS**

XM232

XM231

TOWED

PALADIN

TOWED

PALADIN

CRUSADER

- Compatible With All 39-cal and ERO 155mm Artillery Systems:
  - Fielded: M109 series SPH, M198 Towed
  - In Development: Crusader SPH, JLW-155 Towed
- Automated Handling Compatible:
  - Distinguishable for Manual
  - Rigid Combustible Case
- MANPRINT:
  - Bi-Directional Igniter
  - Any Order
- "No-Excess" Propellant
- Cost Savings for Training & Operations
- Modular Charge System (MCS) for 155mm Artillery JBMOU
- Milestone II 23 Sep 96
- Enter Production in FY2000

Soldier  
and  
System Friendly

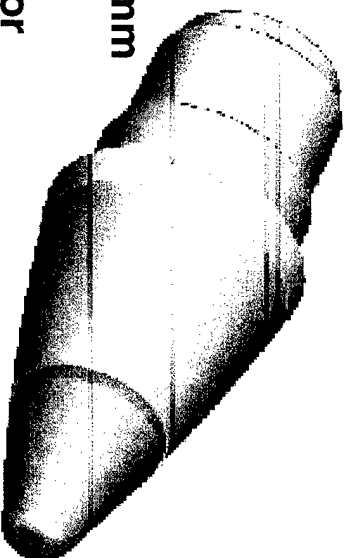




# Multi-Option Fuze for Artillery (MOFA)

## Performance Features

- Integrates Four Function Settings for Bursting Projectiles:
  - Proximity, Time, Point Detonating, and Delay
- Fuze Compatible with All Current 105mm and 155mm Cannon Artillery Systems
- Inductive (Man-Out-of-Loop) Setting Capabilities for High Rates of Fire
- Advanced Technologies Include:
  - Monolithic Microwave Integrated Circuit (MMIC) Chip, Patch Antenna, Harmonic Signal Processing, and Electronic Counter Measure (ECM) Chip
- Successful Qualification Test - July 96
- Pre-Production Qualification Test (PPQT) In Progress

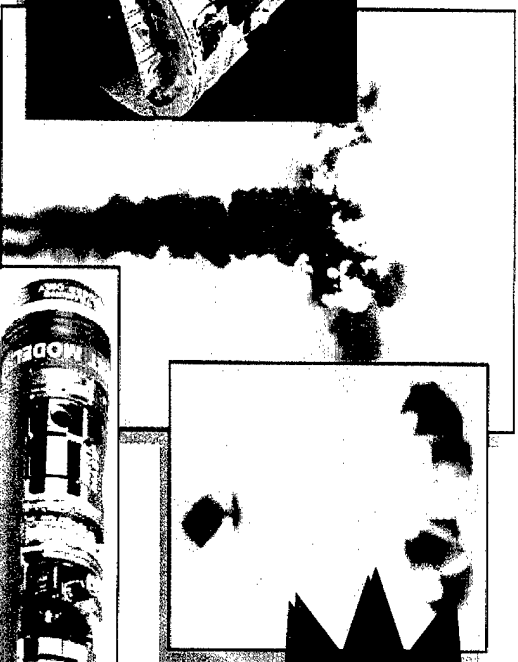
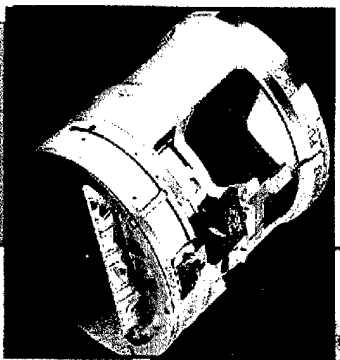


**"World Class"  
Artillery Fuze  
On Schedule for  
FY 99 TC**

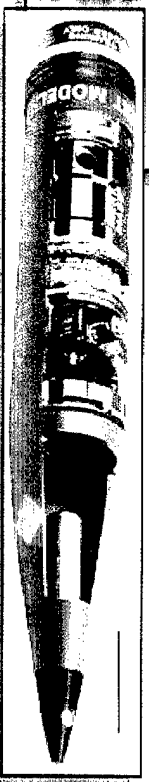


## M898 SADARM

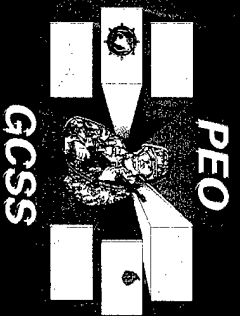
### *What Is SADARM?*



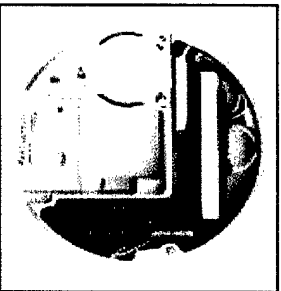
- First Smart Munition for Field Artillery
- Provides Unique Capability to Kill Hard Point Targets



- Multi-Sensor, Fire & Forget, Top Attack
  - Counterbattery Weapon, Secondary Anti-Armor
  - Countermeasure Resistant
  - Explosively Formed Penetrator Defeats All Known Armored Targets From Top



# SADARM PICOTS



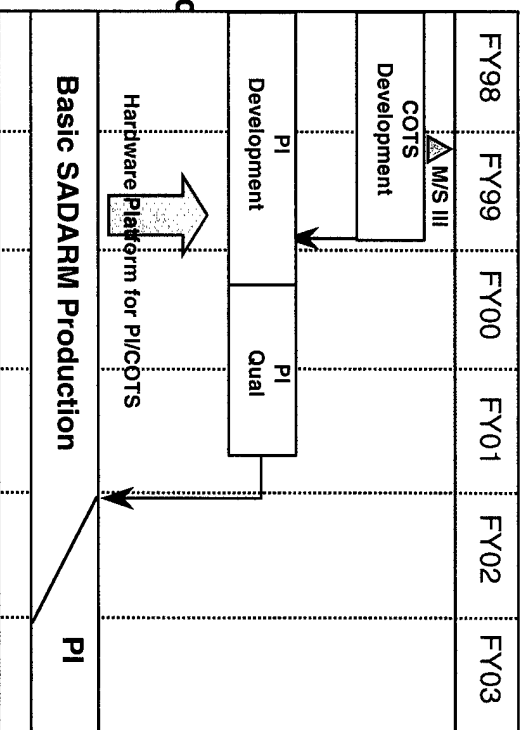
Electronics Module      Millimeter Wave (MMW)  
Assembly

## Objectives

- Reduce Submunition Unit Cost By 22%
- Eliminate Custom Components
- Insert Into Basic Production In FY02
- Increase Effectiveness

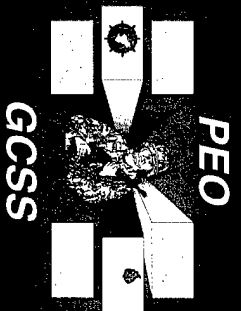
## Key Features/Benefits

- Fewer Parts
- Commercial Packaging
- Less Complexity
- Structural Improvements
- Avoids Parts Obsolescence
- Higher Yield MMW



## Linkage to Basic

- Parts for Qualification
- Support Personnel Working Both Programs
- Production Line Learning



# XM982 System Description

## Mission

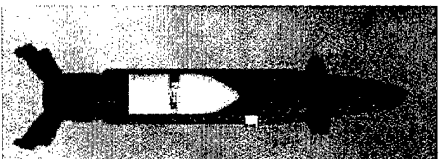
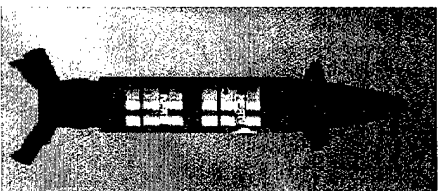
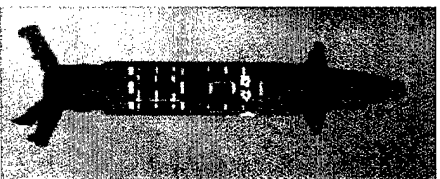
- Provides the maneuver force with improved fire support through an Extended Range, fratricide reducing, accuracy enhancing, more lethal family of 155mm projectiles in support of Force XXI operations.
- DPICM with 64 Submunitions
- SADARM with 2 PI-SADARM Submunitions
- Unitary with Bunker Penetrating HE Warhead

## Capability/Improvements

- Increased Range:
  - Paladin / M198 / JLW155: 28 to 37 Km
  - Crusader: 40 to 47 Km
- Increases Survivability Through Greater Stand-off Ranges

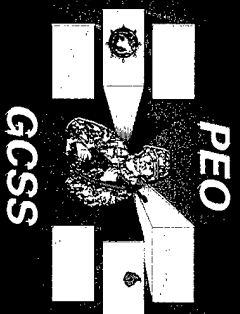
## Initial Operational Capabilities

- DPICM 1Q FY04
- SADARM 1Q FY07
- Unitary 1Q FY08



## Characteristics/Special Features

- One Meter Length / 106 lb
- DPICM Submunitions with Self-Destruct Feature
- On-Board Self Locating System (SLS)
  - GPS / INS Guidance
- Inductive Set Integral Fuze - PIAFS
- Fin Stabilized Glide Air Frame
- Anti-Jam Features
- Modular Projectile Configuration



# M795 System Description

## Mission

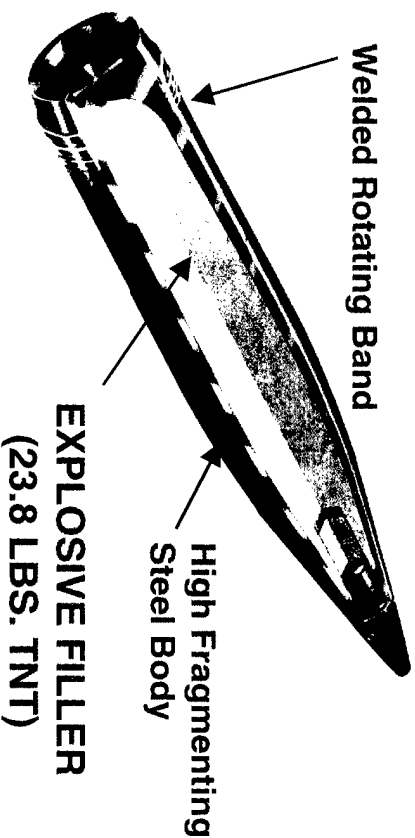
- Provides Extended Range Fire Support for: Harassment and Interdiction (H&I), Fragmentation, Mining, and Blasting Effects.

## Performance

	M107	M795	M795E1
•Weight (lbs.)	95	103	103
•Payload (lbs.)	15.0	23.8	22
•Paladin Range (Km)	17.5	22.5	28.5
•Crusader Range(Km)	17.5	26 to 28.5	34 to 36

## Special Features

- Ballistic Similitude for M483A1 & SADARM
- M795 Compatible with M203A1 and MACS 6
- Significant Lethality Increase Over M107
- Personnel 1.5 to 2.0
- Trucks 1.2 to 1.8
- Hard Targets 1.0
- Train Like we Fight
- M795 Training Round (Proposed)



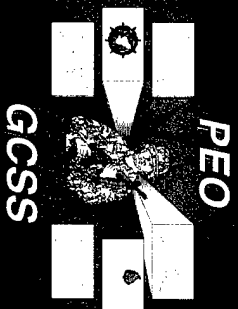
M795	FY95	FY 96	FY97	FY98	FY99
<u>Funding</u>	\$53.6	\$51.6	\$39.9	\$35.2	
<u>Quantity</u>	79,468	130,956	84,210	80,000	

M795E1 is not Funded

## Delivery Data

Matériel Release 1QFY99

On Track

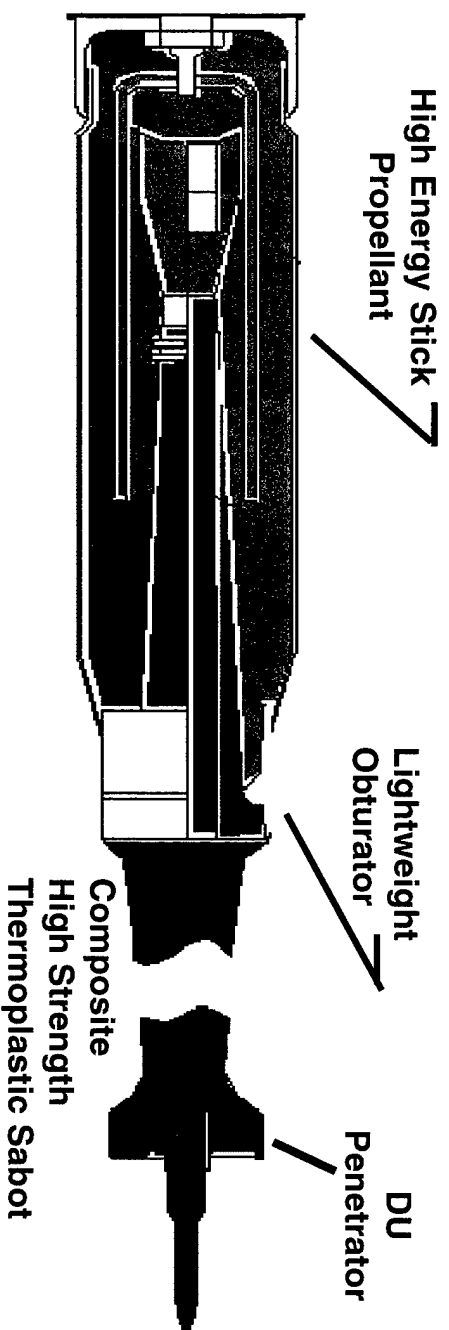


## M829E3

- SOURCE SELECTION
- ORD & MSII Approved
- TEMP Signed
- Contract Signed
- ATK Awarded Contract
- EMD Kick-off 21 SEP

### OBJECTIVE:

Conduct MS II Review 3Q98  
Award EMD Contract 4Q98





# TERM-KE

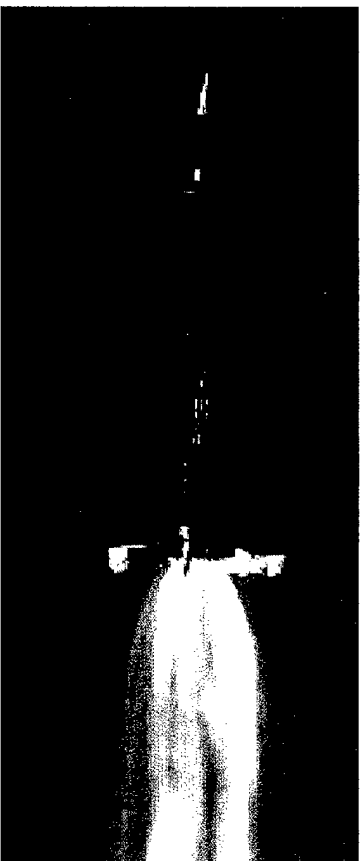
## ■ Smart Tank Fired Munition

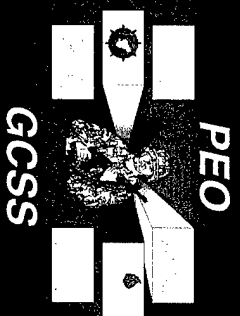
### ■ Major components:

- DU Penetrator
- MMW Guidance
- Rocket Motor Velocity Assist

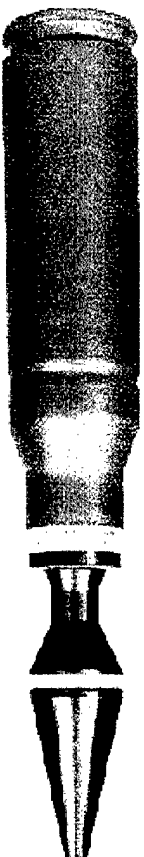
### ■ Congressionally Funded

### ■ Competitor in Generic TERM Program





## M919 APFSDS-T 25MM DU Kinetic Energy Round

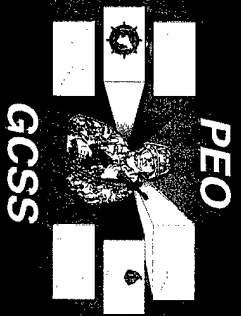


### OBJECTIVE:

Manage M919 &  
Develop M910E1

- Performance Spec.
- Primex is the Prime Contractor
- Production Restart Scheduled for Oct 98
  - Swiss Propellant Qualified
- Tracer Visibility Inadequate
  - 12 Month Tiger Team Effort Underway to Correct
- Production Limited While Tracer Fix is Developed

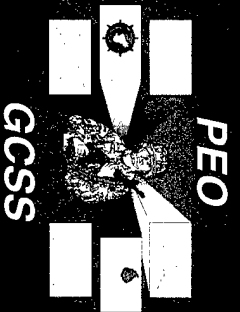




# Total Life Cycle Management Policy & Approach

- Why are We Involved in Life Cycle Management?
- PEO GCSS Approach to Life Cycle Management

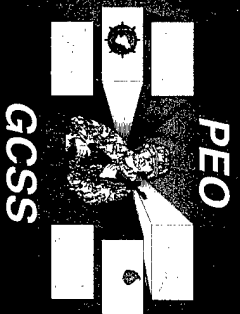




# Management of Total Life Cycle - ACAAT Systems

- PEOs, and MACOMs Who Manage ACAAT Systems are Responsible for the Management of the Total Life Cycle Costs for these Systems.
- Minimize Estimated Sustainment Costs of Developmental Systems
- Reduce the Actual Sustainment Costs of Fielded ACAAT Systems
- Prepare Sustainment Budgets for Each System





# Total Ownership Cost Reduction

- Vital to Realizing Modernization Objectives
- Element of Milestone Decision Review Process
- Top Ten Cost Drivers Identified
- PMs Have Begun Developing Strategies to Manage the Life Cycle Cost.

ASA (RDA) 4 May 1998

**The Challenge is to Reform “Traditional Practices” and Implement Measures to Ensure PMs can Manage the Total LCM of their Systems**



# Industrial Base Policy Letter 98-1, Ammunition

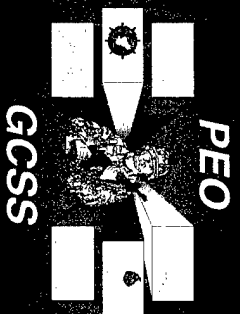
To the Maximum Extent  
Feasible, Transition  
Government Owned  
Assets to the Private Sector.

Rely on Private Sector to  
Respond to Production &  
Replenishment Contracts.

Develop Ammunition  
Family Plans

Manage Ammunition Using  
DoD's Life-Cycle Acquisition  
Process.

Use Acquisition Reform  
Initiatives.



## Pacific Northwest National Lab (PNNL) Industrial Assessment of Industrial Base

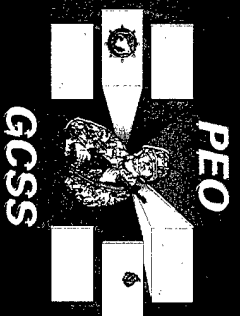
**Acquire Ammunition  
from the Commercial  
Sector**

**Life Cycle Acquisition  
Strategies Led by PM's**

**PEO  
Management**

**Industry Focus:  
How to Meet the Needs**

**Gov't Focus:  
Total Needs for Munition**



## PM Life Cycle Responsibility

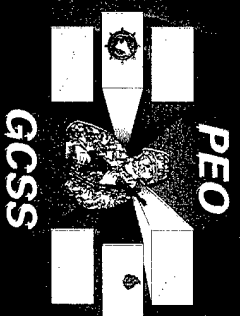
■ The PM, or Their Agent, are the Wholesale Manager, Responsible from Milestone 1 thru Demil

Developing, Producing,  
Tracking, Storing and  
Distributing Munitions  
to the Field.

Maintaining, Upgrading  
and Resupply of the  
Inventory.

Demilitarization,  
Recycle and  
Disposal.

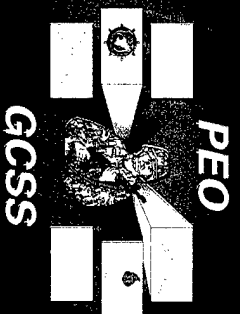




## What is the Goal?

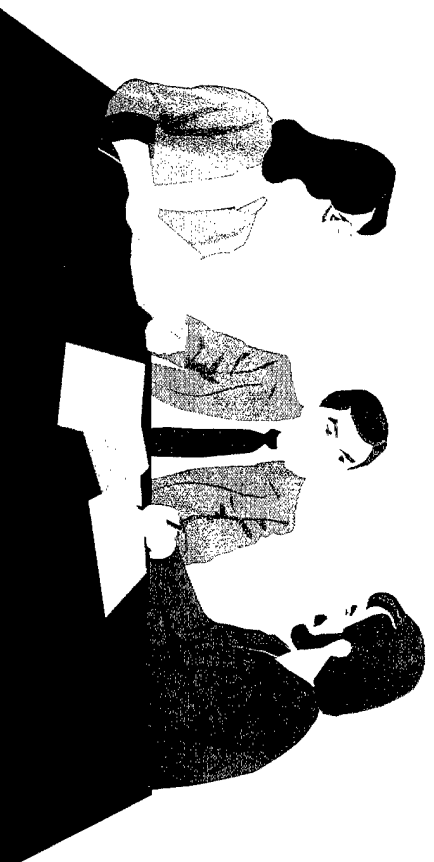
- To Find Economies by Integrating Each Phase of the Life Cycle into One Strategy.
- Use Cost Savings to Promote Modernization.



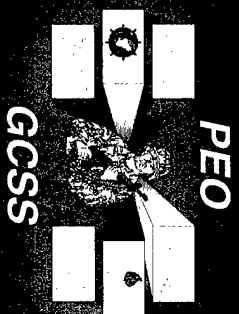


# Implementation

- PM Charters then Chairs an Integrated Process Team to Develop the Family Acquisition Strategy.
- The IPT Develops Business Plans to Optimize Life Cycle Readiness by Integrating R&D, Technology, Industrial and Facility Planning.
- The PEO Integrates the Business Plans into one Economical Munitions Business Plan.





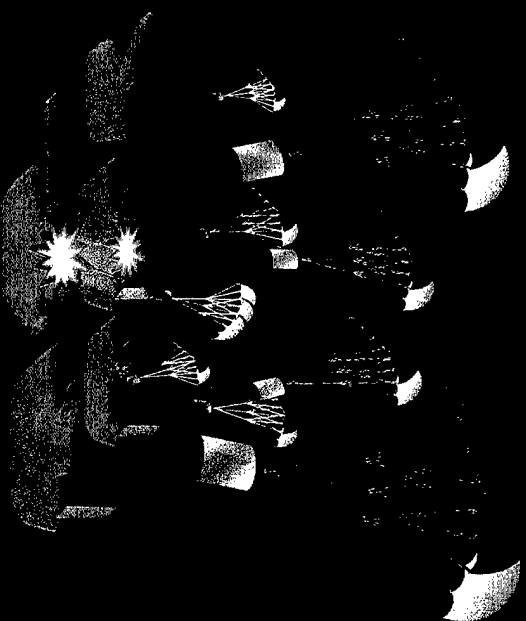


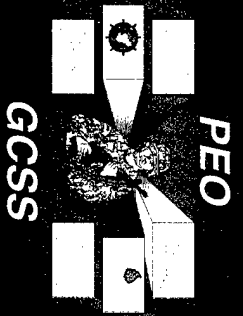
# Smart Munitions - Killing More With Less

	<u>Fired</u>	<u>BDA</u>	<u>DPICM req'd (JMEMS)</u>
SADARM	220 Rounds	100 FV	3,600 Rounds

MSTAR	204 Rockets	35 Tanks	280 Rockets
		15 FV	60 Rockets
		52 Arty	<u>324 Rockets</u>

664 Rockets

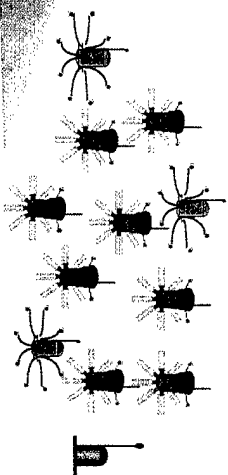
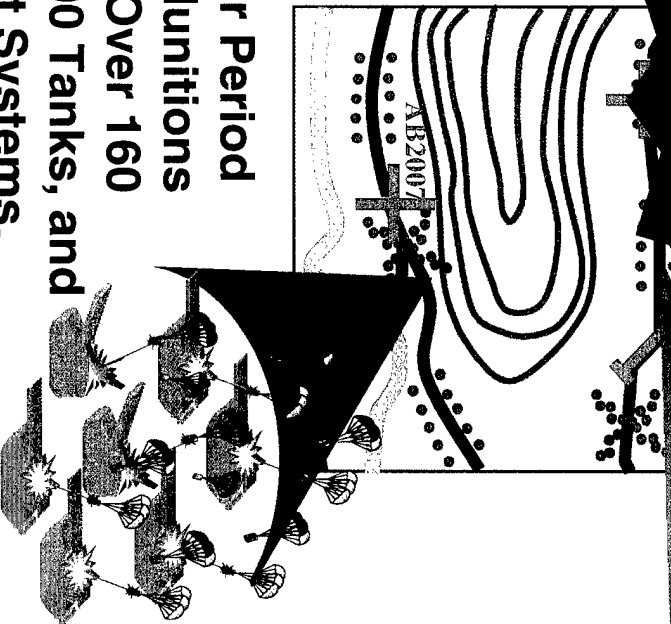




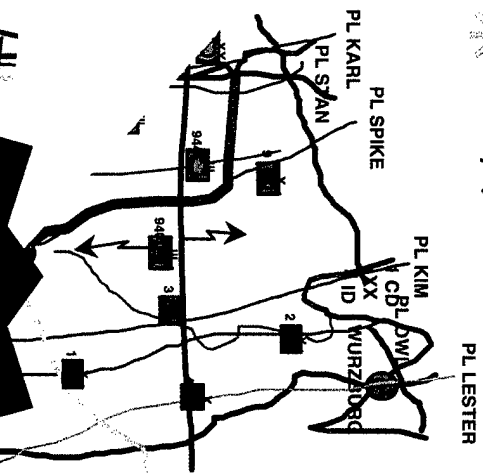
# SADARM Killer Team

**Engineer Emplaced  
Raptor Minefields**

**In an 8 Hour Period  
SADARM Munitions  
Destroyed Over 160  
Artillery, 200 Tanks, and  
260 Combat Systems.**



**Crusader Delivered  
SADARM**

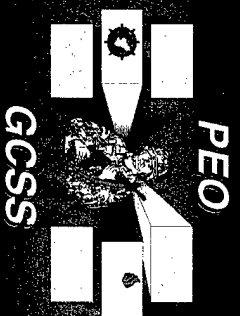




# An Operational Concept for Shaping

- Operational Concept of “Find (Intel) - Kill (Fires) - Finish (Maneuver)” Validated in Various Simulations
  - Maneuvering to Exploit Effects of Fires Possible
  - Armor Formations Now Legitimate Target Sets for FA
- Division Effective in Optimizing Sensor-to-Shooter Linkages
  - Combined Arms Ambushes / SADARM Killer Teams Effective
  - Comanche-MLRS (Cmd and Atk Bn) Link Proven Winner
  - UAV Exceptional Targeting Platform
- SADARM and MSTAR Provide Capability to Strike Decisively Without Large Ammunition Expenditures

**Artillery Accounts for  
40% of Division's Tank Kills**



# Thoughts I Want to Leave You With

**PEO GCSS is Committed to Life  
Cycle Management**

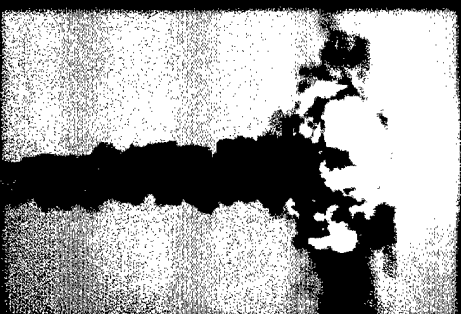
**Providing the Latest, Most  
Lethal Ammunition to the  
Soldier**

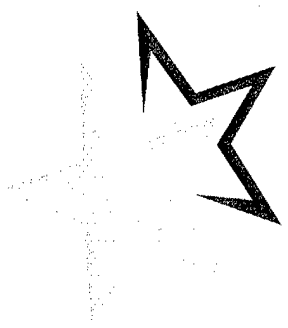
**Using the Savings for More  
Ammunition Buys**

**Finding Efficiencies Through  
Industry/Government Partnering**

**Need Industries Help in How  
Best to Partner**

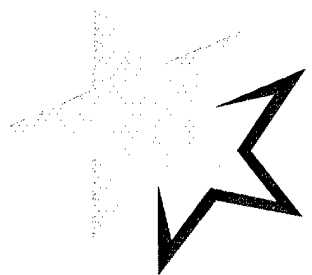
**Need to Strengthen  
Communication**





# ICAP

International Committee of Association of Professional



# U.S. ARMY/GOVERNMENT PARTICIPANTS

Major General James W. Monroe  
Commanding General

Brigadier General John J. Dyermond  
Deputy Chief of Staff, Administration

Mr. Milton McKinney  
Ombudsman/Competition Advocate

Brigadier General John P. Geis  
Commanding General

Colonel Lawrence J. Sova  
Commander

## NDIA MEMBERS

Major General Paul L. Greenberg  
U.S. Army (Ret)  
Vice President Operations  
NDIA

Colonel Ira W. Click  
U.S. Army (Ret)  
Assistant Vice President, Operations  
NDIA

# MEMBERS AND SECTORS

---

Dr. Winston N. Brundige

★ Demilitarization

Mr. Floyd A. McCreight

★ Pyrotechnics

Dr. Peter A. Bukowick

Mr. Kenneth R. Morgan

★ Propellants & Explosives

★ Warheads & Rockets

Mr. Albert J. Calabrese

Mr. James R. Vieregge

★ Munitions Technology

★ Large Caliber

Mr. Victor Guadagno

Mr. Michael S. Wilson

★ Systems

★ Medium Caliber

Dr. Stephen L. Guirra

Mr. Michael H. Yon

★ Fuzes

★ GOCO's

Mr. Rick Loghty, Co-Chair

Ms. Elaine Kennedy, Recorder

ICAP

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# TOPICS DISCUSSED

- ❖ IMPROVING THE IMAGE OF AMMUNITION IN WASHINGTON
- ❖ GOCO/GOGO CONCERNS FOR THE FUTURE
- ❖ ACQUISITION POLICY AND BUSINESS ISSUES
- ❖ TRUST ISSUES/GOVERNMENT & INDUSTRY PERSPECTIVE
- ❖ PROCESS FOR EXCESSING INSTALLATIONS
- ❖ AMMUNITION PRODUCTION BASE ASSESSMENT
- ❖ DEVIL



# The Challenge



Number Of Competitors + Amount Of Work + Capacity For Needs +  
 Replenishment Needs + Desire For Multiple Year Contracts + Desire To  
 Bundle + Requests To Direct Work - Industry Consolidation -  
 + Vertical Integration + Smaller Profit Margins + Full &  
 Open Worldwide Competition + Low Price Awards - Concerns For Foreign  
 Competition Equity - Special Interest Groups -  
 + Studies, Studies, Studies - Political Help - Conflicting  
 Objectives - Attractiveness To Commercial Companies - ROI Uncertainties  
 - Legal Paralysis - Cycle Time - Success Based On Words +  
 - Cost Of Competition + Safety + Successful Defense  
 Conversion + ? = Tilt

# PROGRESS REQUIRES TRUST

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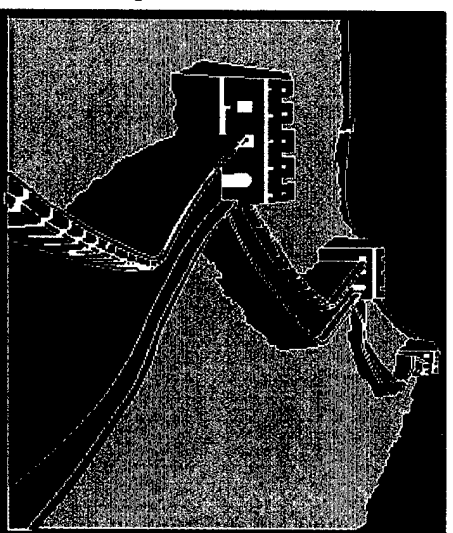


TRUST IS FUNDAMENTAL TO SUCCESSFUL PARTNERING

WHAT IS THE EQUATION?

# The Road To Trust

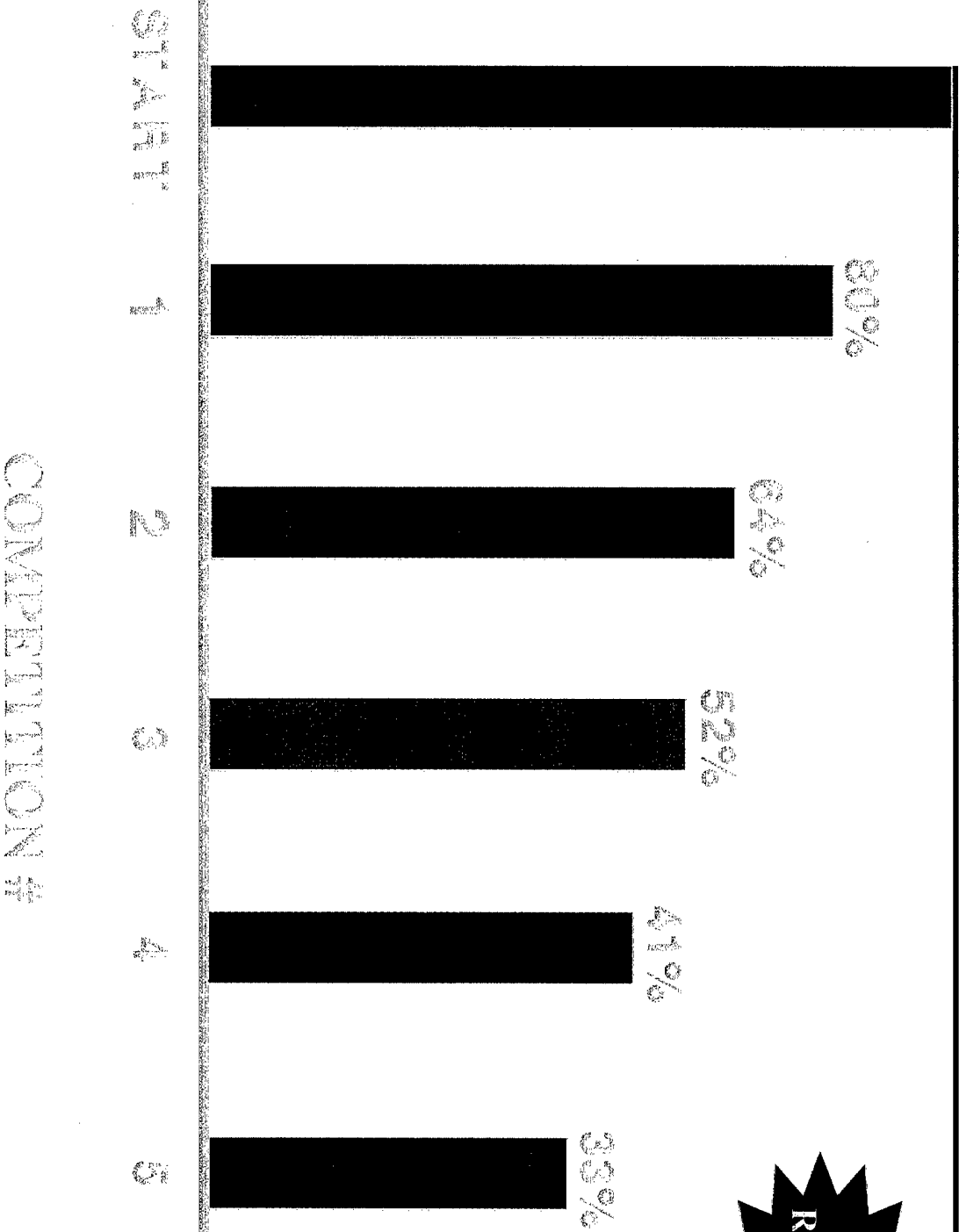
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**Clear Objectives + Known Desired Results + Way to Measure  
+ Team Building + One Accountable Voice + Walk The Talk +  
Take Ownership + Fix Problems Together + Don't Go Over My  
Head + Try It + Take Some Risks - Don't Go Over My  
Head + Tell Me The Whole Story - Don't Compete Just To Do  
It - Surprises + Don't Go Over My Head + Attack Problem +  
Communicate Success = Better Trust**

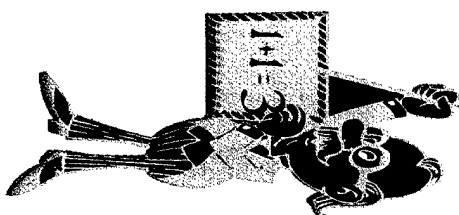
# COMPETITION MAGIC

Current Price 100%



20%  
REDUCTION

WHAT'S WRONG WITH THIS EQUATION?



ANY EXISTING PRICE = MUCH BETTER PRICE  
COMPETITION

## IS IT TRUE THAT:

- ★ GOVERNMENT & CONTRACTORS WORK HARD TO REDUCE COST & IMPROVE EFFECTIVENESS CONTINUOUSLY?
- ★ THERE IS A FEASIBLE LIMIT FOR COST REDUCTION GIVEN ANY PROCUREMENTS T&C'S?
- ★ FIRM FIXED PRICE IS ALWAYS THE RIGHT ANSWER?
- ★ PERFORMANCE SPECS ELIMINATE THE NEED FOR OVERSIGHT AND PRESCRIPTIVE REGULATIONS?
- ★ ALL COST VARIABLES LIKE LABOR, BENEFITS, MATERIAL, AND OVERHEAD HAVE AN EQUAL PROBABILITY FOR REDUCTION?
- ★ MOST EASY OVERHEAD REDUCTIONS HAVE BEEN TAKEN?
- ★ THE PNPL RECOMMENDATION AND GOVERNMENT REORGANIZATION ARE THE ANSWERS?



## SOME FUNDAMENTALS FOR CONTRACTORS

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- ❖ MUST MAKE PROFIT
- ❖ COMPETING OPPORTUNITIES FOR MARKETING DOLLARS
- ❖ BOARDS WATCH OUT FOR STOCKHOLDER INTEREST
- ❖ RISKY TO GUESS AT BUDGETS, CUSTOMER STRATEGY, QUANTITY OF EACH ITEM, AND IMPACT OF RESTRUCTURING



# התנועה הלאומית = אגודת העובדים

